

THE ILLUSTRATED LONDON NEWS

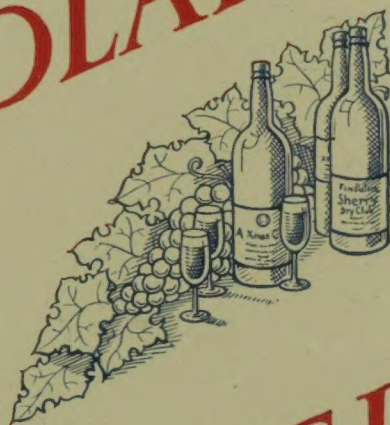


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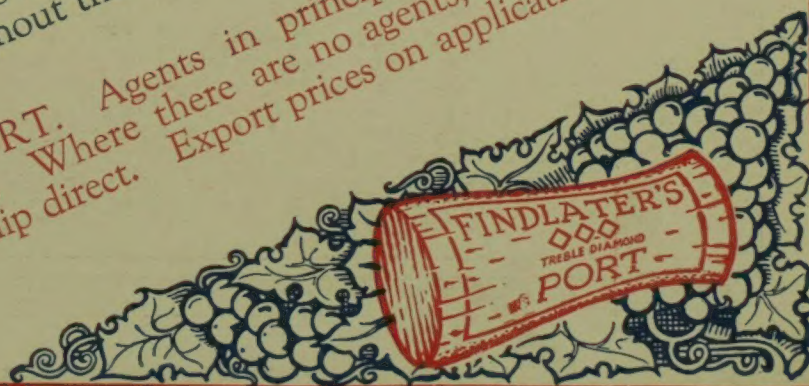
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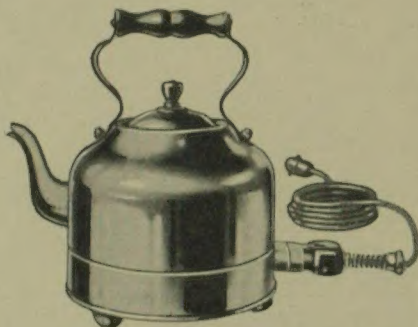
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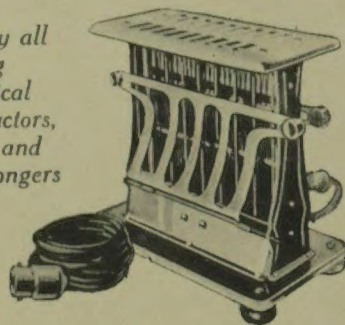
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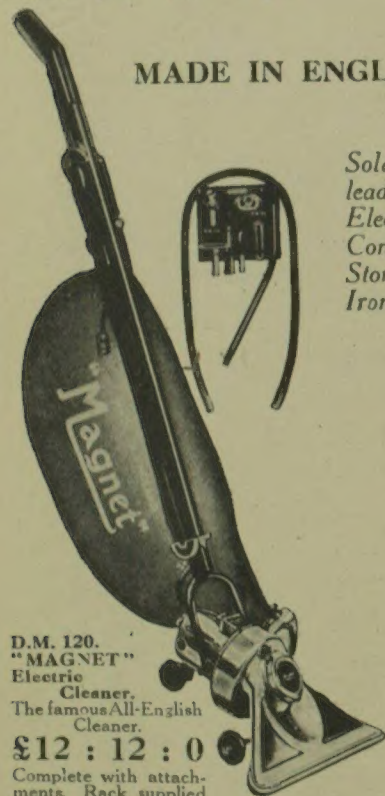
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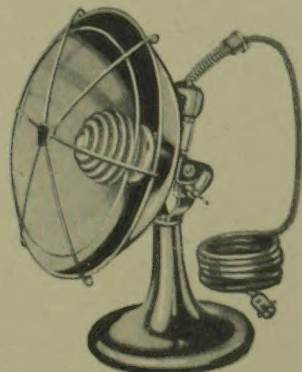
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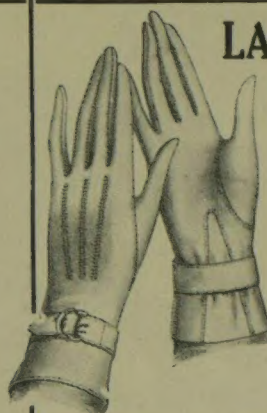
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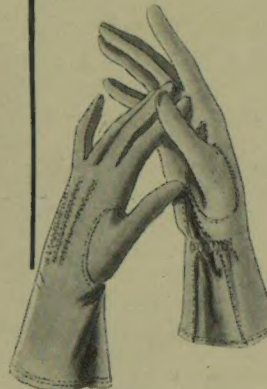
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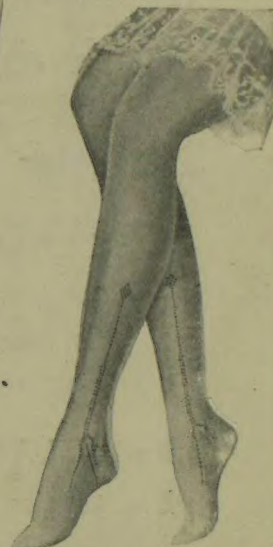


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A PECULIAR SYMBOL OF RESURRECTION FROM TUTANKHAMEN'S TOMB: A "GERMINATING" FIGURE OF OSIRIS FORMED OF NILE SILT PLANTED WITH CORN, MOISTENED FOR SPROUTING.

Among the most remarkable ritual objects found in the Tomb of Tutankhamen is this curious life-size "germinating" figure of Osiris. It consists of a wooden framework which was moulded and hollowed out into the form of the god, covered with linen, and filled with silt

from the bed of the Nile, in which corn was planted. The corn was moistened so that it sprouted, and thus became a symbol of resurrection, both of the god and of the dead King. On page 590 of this number is an article on the subject, with another illustration.

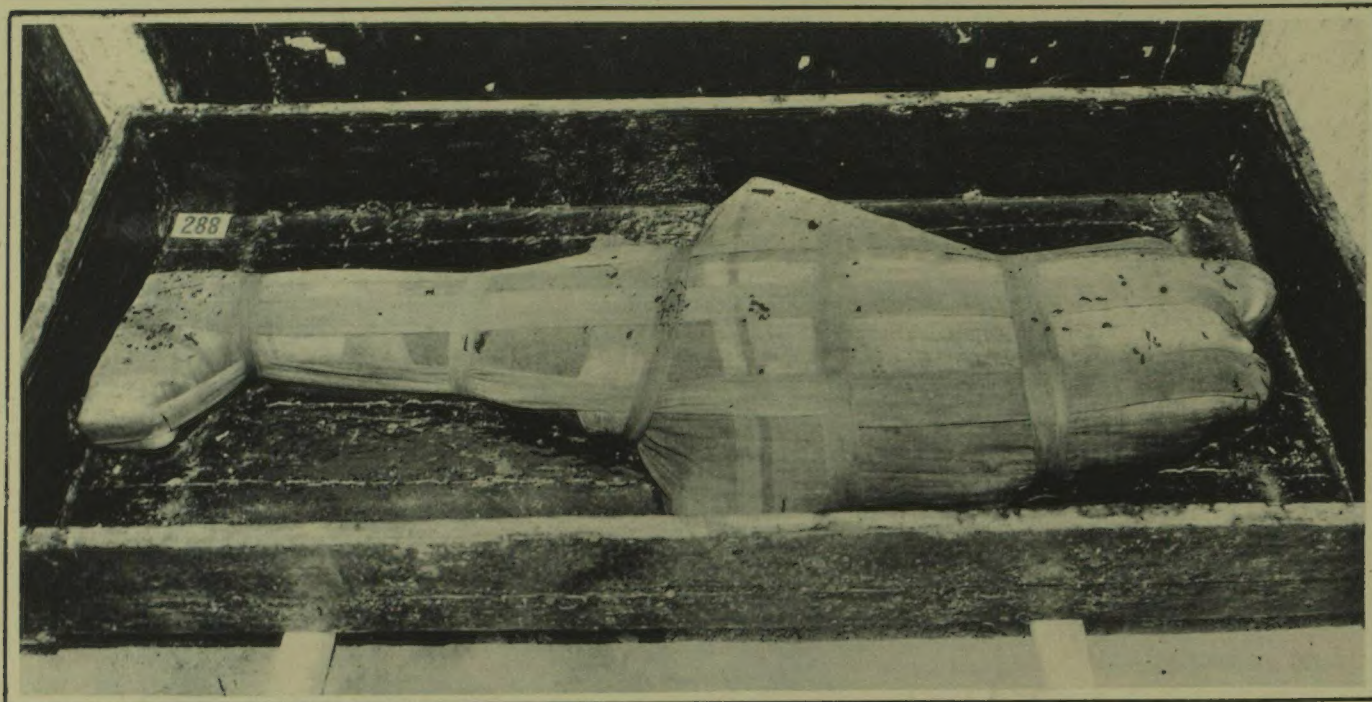
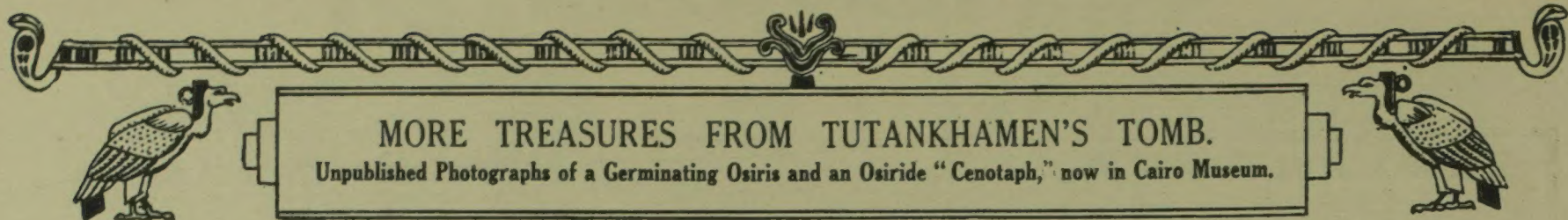


FIG. 1. WRAPPED IN LINEN AND BANDAGED LIKE A MUMMY: THE LIFE-SIZE FIGURE OF THE "GERMINATING" OSIRIS (SHOWN UNWRAPPED ON OUR FRONT PAGE) INSIDE THE BOX IN WHICH IT WAS FOUND IN TUTANKHAMEN'S TOMB.

As explained in the article on this page, the "germinating" figure of Osiris, filled with Nile silt and planted with corn, was placed in the tomb as an emblem of resurrection.

Photograph by Mr. Harry Burton, of the Metropolitan Museum of Art, New York. (World Copyright Strictly Reserved.)

THE Tomb of Tutankhamen has continued to yield fresh treasure since we last dealt with the subject, in our issue of July 7, when we illustrated the clearance of the annexe and the objects found therein. Recently, it may be recalled, the Prince of Wales and the Duke of Gloucester inspected the Tutankhamen exhibits in the Museum at Cairo, when visiting that city on their way to East Africa. In this museum are to be seen the interesting objects which are shown on this and the facing page, and on the front page of this number.

We have lately had an opportunity of hearing a personal account of the latest "finds" in the Tomb from its original discoverer, Mr. Howard Carter. In the course of the interview he told us that among the numerous objects of a purely ritual nature that were found was a curious life-size germinating figure of Osiris. This remarkable figure is the subject of our front page photograph.

In those ancient days, Mr. Carter explained, the illustrious dead were in every possible way identified with Osiris, the Son of the Earth-god Keb and the Sky-goddess Nut, who succeeded his father as King of Egypt. According to Plutarch (legend of Isis and Osiris) and other ancient writings, Osiris was murdered by his brother god, Seth, who threw his corpse into the water. His body was sought by his sister and spouse, Isis, who found it and fanned breath into it. He was resurrected, was defended by his son Horus, who succeeded him, and he became the King of the Dead in their realm in the under-world and even in the sky.

Furthermore, this much-revered divinity, Osiris, among his other aspects was the god of vegetation, which dies but is revived again by the inundation of the Nile. Hence the significance of this wooden framework moulded and hollowed out in his form, covered with linen, and filled up with silt from the Nile bed, in which corn was planted. The corn, when moistened, sprouted and formed a symbol emblematical of both the god's resurrection and that of the deceased.

Dr. H. R. Hall, the Keeper of Egyptian and Assyrian Antiquities at the British Museum, considers that the corn was moistened for sprouting when placed in the tomb. This life-size germinated form of Osiris was carefully wrapped in linen and bandaged in similar manner to a mummy, and it was placed in a large shallow oblong box (as shown in Fig. 1) varnished inside and out with

a black resin. "It is curious to note," said Mr. Carter, "that in technique it was one of the coarsest objects in make that were found in the tomb—a not uncommon custom in the case of purely ritual material among the funerary equipment of ancient Egyptian tombs, no matter whether the owner were of high or of low station."

Turning to the statuette shown in Fig. 2 and on the opposite page, Mr. Carter said: "Another and very charming related object reminiscent of Osiris is a small presentation cenotaph to the deceased King, carved in wood." It was given and made by the order of the King's Scribe, who was 'Overseer of the Treasury' and 'Overseer of the Works in the Place of Eternity' (i.e., the Necropolis). He was called May, and he describes himself on this very monument as 'The excellent servant of his Majesty, who seeks good' and finds virtue.'

From Osiris, originally an ancient King deified (Mr. Carter went on to explain), came the type of the dead King. Thus the circumstances of his funeral are revived and mimetically represented in sundry ways among the ceremonial equipment of this royal burial. This small monument of wood (about 12 in. in length) packed with linen pads in an oblong coffin-like chest (see Fig. 4 on the opposite page) represents a recumbent figure of the King as the divine prototype lying on a funeral bier (see Fig. 3 on the opposite page), in shape a bed of lion form.

The Osiride figure of the King lies stretched out at length upon the bed; his head, covered with the *Nemes* (head-dress), bears the royal *uraeus* (cobra); his hands, free from wrappings, grasp the emblems of Osiris—the crozier and flagellum sceptres — unfortunately missing.

On the left side of the recumbent figure a *Ba*-bird, or "soul," protects the mummy with its left wing; on the right side a figure of a falcon, the *Ka*, or "spirit," protects the mummy with its right wing; they are nothing less than manifestations of divine protection on the part of the "soul" and "spirit," or the two forms of the double of the deceased or Osiride King (see Fig. 2).

It is a noteworthy fact that placed with this effigy were model implements of copper—namely, a pick, a hoe, and a yoke with two baskets, implements like those found with *Shawabti* figures. "One is led to believe," said Mr. Carter, "that the recumbent figure was also in some way related to those ritual statuettes." They are so named because they were originally made solely of *shawabti* wood.

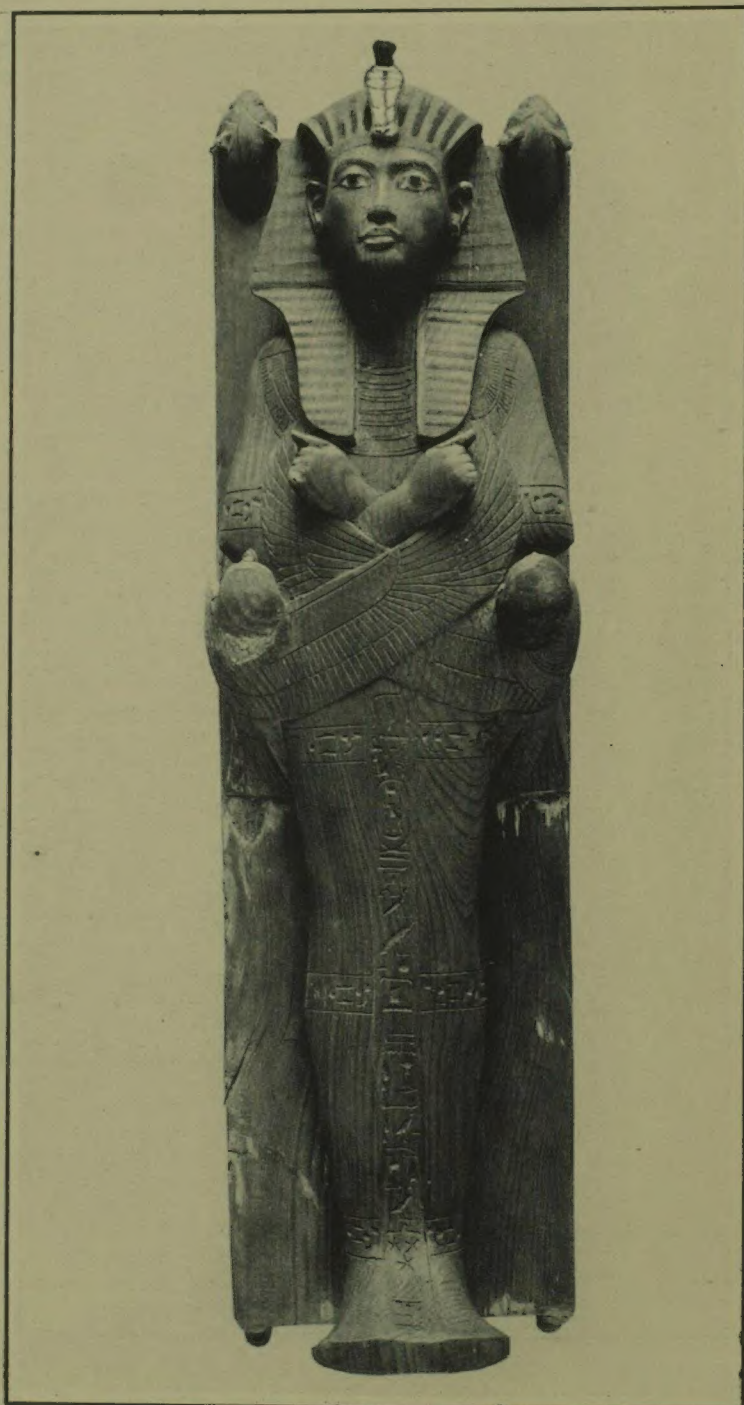


FIG. 2. A SMALL OSIRIDE STATUETTE OF TUTANKHAMEN, FLANKED BY THE BA-BIRD AND THE FALCON. "KA": A VERTICAL VIEW OF THE RECURBENT FIGURE ON THE OPPOSITE PAGE (ABOUT 12 IN. LONG).

Photograph by Mr. Harry Burton, of the Metropolitan Museum of Art, New York. (World Copyright Strictly Reserved.)

FIRST PHOTOGRAPHS OF TUTANKHAMEN'S PRESENTATION CENOTAPH.

PHOTOGRAPHS BY MR. HARRY BURTON, OF THE METROPOLITAN MUSEUM OF ART, NEW YORK. (WORLD COPYRIGHT STRICTLY RESERVED.)

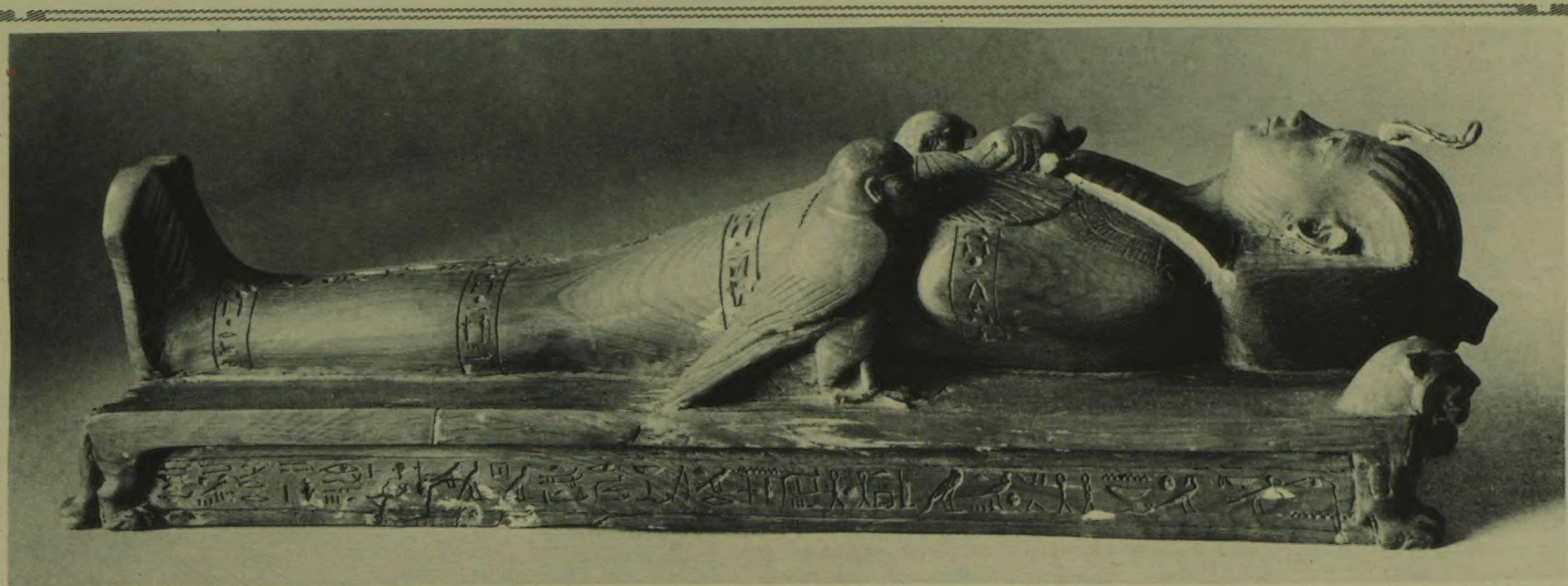


FIG. 3. WITH A BA-BIRD, OR "SOUL" (CENTRE FOREGROUND), PROTECTING THE BODY WITH ITS LEFT WING, AND ON THE OTHER SIDE A FALCON, THE KA, OR "SPIRIT": A RECUMBENT OSIRIDE FIGURE OF TUTANKHAMEN (ABOUT 12 INCHES LONG) RECENTLY DISCOVERED IN HIS TOMB, AND SHOWN IN AN UPRIGHT POSITION IN FIG. 2 ON THE OPPOSITE PAGE.

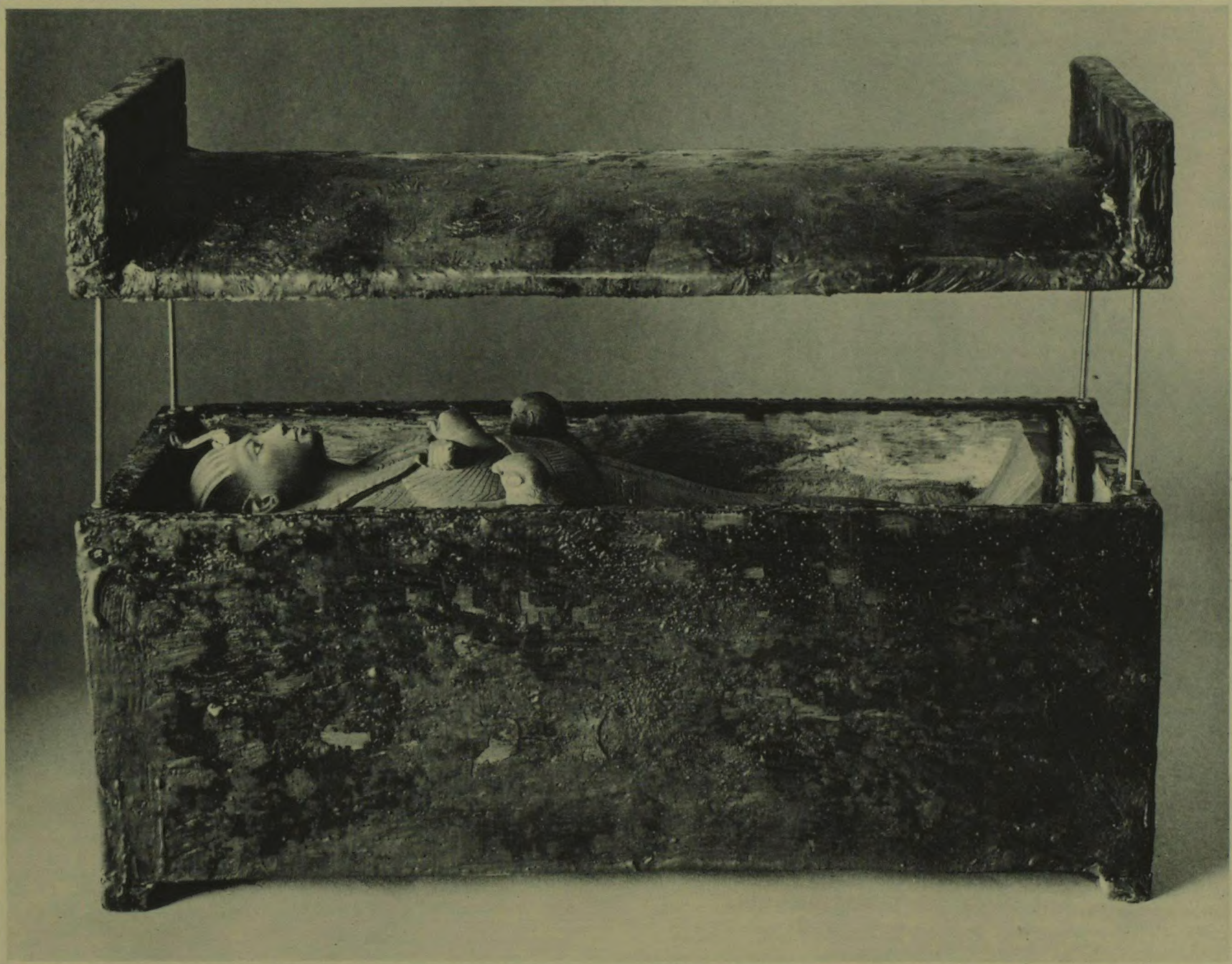


FIG. 4. A FUNERARY GIFT TO THE DEAD KING FROM "THE OVERSEER OF THE WORKS IN THE PLACE OF ETERNITY" (I.E., THE NECROPOLIS): THE COFFIN-LIKE CHEST CONTAINING THE OSIRIDE FIGURE OF TUTANKHAMEN ILLUSTRATED IN FIG. 3 ABOVE, AND IN FIG. 2 ON THE OPPOSITE PAGE.

Among the most interesting later discoveries in the Tomb of Tutankhamen was the little "cenotaph" of carved wood here illustrated, which was found inside an oblong coffin-like chest, as shown above in Fig. 4. The cenotaph, which is only about a foot long, was a funerary gift from the director of the royal necropolis, who was known as "Overseer of the Works in the Place of Eternity." As explained in the article on the opposite page, the figure represents the King in the form

of Osiris, his left side protected by the wing of the Ba-bird, or "soul," and his right side by the Ka, or "spirit," in the form of a falcon. The hands originally grasped the Osiride emblems—the crozier and flagellum—but these were missing when the discovery was made. On the forehead is the *uraeus*, or royal cobra, an emblem of sovereignty. In royal burials of ancient Egypt, the dead kings were identified with Osiris as the god resurrected after having been slain.



By G. K. CHESTERTON.

I MENTIONED Mr. Humbert Wolfe lately in connection with a current criticism, which affects to condemn verse for being musical, or even for being metrical. Since then he has been expressing himself not in verse but in prose, and has published a collection of critical essays, which are in part an answer to that sort of criticism. They are published by Victor Gollancz under the name of "Dialogues and Monologues." Many of them are in the form of the Platonic disputation, and in these he gives a very handsome and spirited show to the critics whom he criticises. He is himself, on the whole, on the side of tradition, though with a wide sympathy for many forms of innovation. But even the innovators might well be satisfied with the case he makes for them in the controversy. I wonder that Mr. H. G. Wells has not more often made use of this ancient form of the Platonic Symposium; unless, indeed, he is now so morbidly modernist as to have a horror of all ancient forms. This ancient form, like many ancient forms, does effectively what the modernist form does with crudity and confusion. It really does allow for what Mr. Wells once called "provisional thinking"; that is, for a man thinking of a great many things that he does not really think. I am bored and bothered by wondering which of his worst or best remarks is by Wells or Boon or Bliss or Clissold. But if all four of them sat and talked round a tea-table, like the little party in "Alice in Wonderland," we could apportion appropriate remarks to the Mad Hatter and the somnolent Dormouse, and let the wiser and more permanent Wells wind up the debate. In this book the wiser and more permanent Wolfe winds up the debate, though the young wolf-cubs, so to speak, are allowed to howl moderately at the moon. He makes some good debating points in the debate. He listens to the somewhat arrogant expositions of the Imagists and other innovators, who insist that poetry must detach a single fact or form from all its surroundings, causes, or consequences. Then he quietly quotes a perfect example of that very thing; a poem of two verses called "The Eagle," about as complete as it can be, and about as causeless and inconsequent as it can be. And it is by that very venerable Victorian, Lord Tennyson, formerly Poet Laureate. Sometimes he abandons this method of mildly taking a rise out of the Futurists, and expresses himself quite sharply about some forms of Futurism. He has found expression for many fervent though silent critics in saying that Miss Gertrude Stein reduces the English language to a prolonged fit of hiccups.

In any case, this debate about new forms in art interests me, because my reaction to it is not that of the ordinary reactionary. The first fact I feel is that all this faith in novelty is the very reverse of novel. It is also the very reverse of original. It has now been a convention for more than a century and a half; and it was originally borrowed from the stale and vulgar world of party politics. It is from the old wrangles of Rads and Reformers and True Blue Tories that modern art has borrowed this queer notion of incessant Progress and each generation crowing over the last. When I read all this confident exposition about new methods that must now supersede old methods; of how Yeats and Swinburne must yield to Mr. Eliot and Mr. Pound, just as Tennyson and Browning had to yield to Yeats and Swinburne, I heave a sigh that is full of old and tender memories. I do not feel as if I were reading some revolutionary proclamation of new anarchic hopes or ideals; I feel as if I were reading Macaulay's Essays.

I read Macaulay when I was a boy and believed him, because I was a boy. I might almost say because he was a boy. For the best and heartiest thing about Macaulay was that he lived and died a boy; full of conviction, ignorant of life; cocksure and confident of the future. And in Macaulay's Essays will be found all that theory of the succession of things more and more "advanced" which the artistic schools still repeat, still scornfully hurl against each other, and still meekly inherit from each other. Progress, said Macaulay, never stops. "What was its goal yesterday will be its starting-point to-morrow." I believed that simple theory when I was a boy. But I am

and familiar facts of psychology, such as the fact of fatigue. It is always raving about Relativity, and then ignores the obvious fact that fatigue is relative. If a man is made to walk twenty miles between two stone walls engraved on each side with endless repetitions of the Elgin Marbles, it is not unlikely that by the end of his walk he will be a little weary of that classical style of ornament. But that is because the man is tired; not because the style is tiresome. The matter might be immediately tested by starting a fresh and enthusiastic man from the other end; a man in the mood of the early Renaissance, eager for the Greek spirit but still ill-acquainted with it. In this sense and for this reason, it is necessary to have

novelty; but the novelty is not necessarily improvement. It does not necessarily give the man for whom the old things are stale any right to scorn the man for whom the old things are fresh. And there always, are men for whom the old things are fresh. Such men, so far from being behind the times, are altogether above the times. They are too individual and original to be affected by the trivial changes of time. A man who really wants to write a sonnet, as Shakespeare wanted to write a sonnet, is still as spontaneous as a man who wants to sing a song. There are sonnets by Mr. Baring or Mr. Belloc that are exactly of that sort; and, so far from being staler than others, they are fresher than others, because their Renaissance joy in the classical has not gone stale. But that does not mean that everybody must go on writing sonnets, and nothing but sonnets, for ever; for everybody would not want to; and enforced repetitions would really be stale. In other words, it is sometimes hygienic to have a change, even when it is not an improvement. We may leave an old field fallow—not because it will never bear crops again, but because it will; not because it is barren, but because it is not. We may turn away for a time from a good thing—not because it is not good, but because we have, for a purely relative reason, really had too much of a good thing. That is the real reason of the continual stir and change in styles and methods; and it is (within reason) a complete justification of it. Boys will be boys; but they will not necessarily be better men.



THE FAMOUS SCIENTIST WHO WRITES IN THIS NUMBER ON "THE MOON AND THE TIDES": SIR OLIVER LODGE, F.R.S.—A RECENT PHOTOGRAPH TAKEN AT HIS HOME, NORMANTON HOUSE, LAKE, NEAR SALISBURY.

Sir Oliver Lodge's recent pronouncements regarding the Moon and the Earth led to some rather sensational misinterpretations of his meaning. In this number (on page 600) we give an article from his own pen, which will enable our readers to understand exactly what he intended to convey. In connection with it we reproduce, on pages 601, 602-3, a series of remarkable studies of lunar landscape, based on scientific data, drawn by a French artist. Sir Oliver Lodge, is, of course, distinguished among men of science for his interest in spiritual things and for his philosophic outlook on the material universe. During the recent meeting of the British Association in Glasgow he delivered a notable address at the Wellington United Free Church, discussing body and spirit and the after life. Sir Oliver was President of the British Association in 1913-14. From 1881 to 1900 he was Professor of Physics at Liverpool, and from 1900 to 1919 Principal of the University of Birmingham. Among his latest books is "Science and Human Progress."

rather surprised, by this time, that the boys have not found a new one.

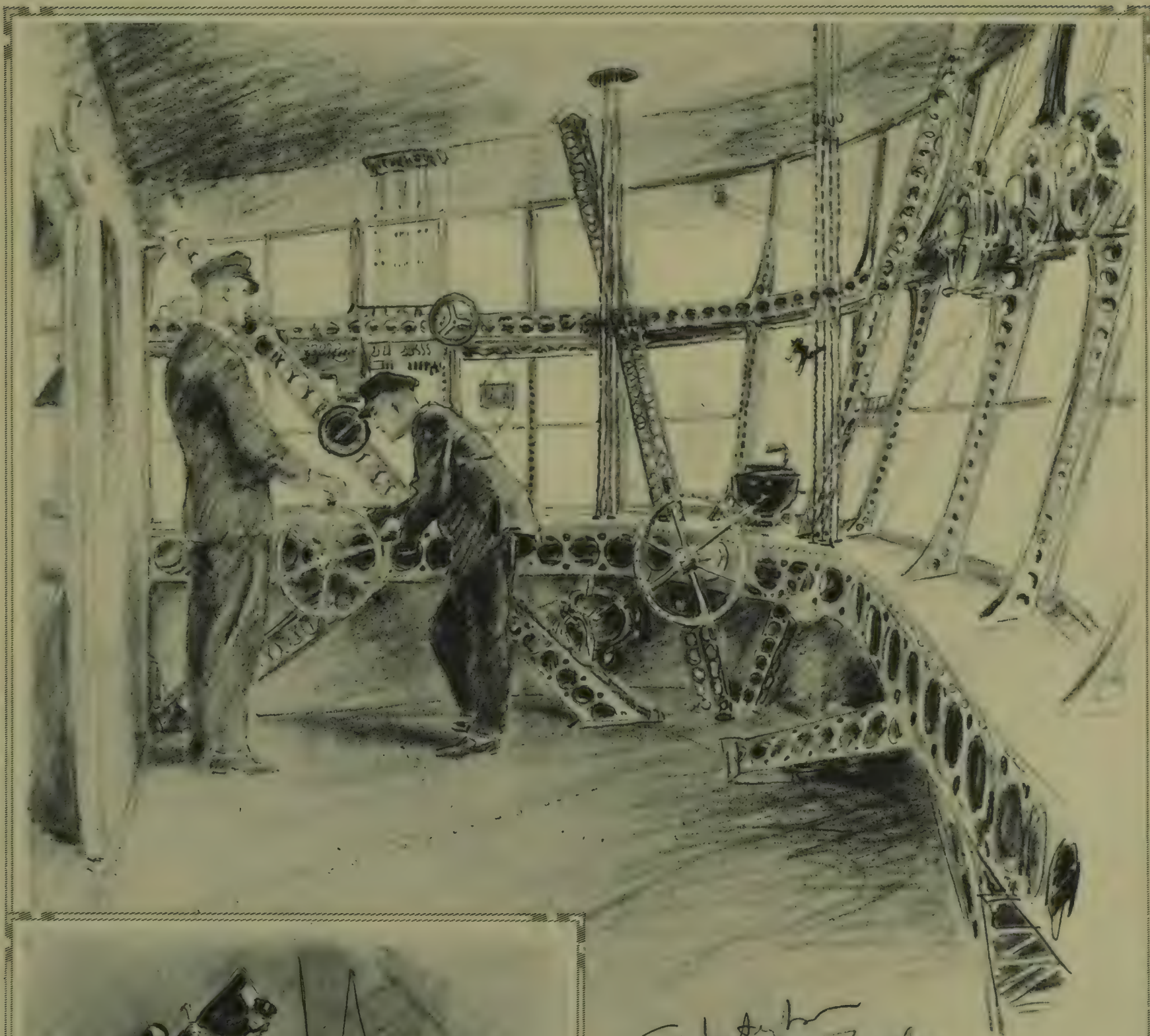
Anyhow, I have now come to believe in a totally different theory about novelty, and even the necessity of novelty. What puzzles me about current culture is that it ignores the very truths which it exaggerates. It is always talking our heads off about Psychology, and then it entirely leaves out the most elementary

There are at least two things to be said for this theory of change, as an alternative to the rather antiquated theory of progress. First, it does at any rate correspond to the real facts of artistic and literary history, repeated again and again. We do not see in the past a perpetual line of increasing liberation or enlargement of artistic experiment. What we see in the past is the much more human business of men first doing something badly; then doing it well; then doing it too well—or, at least, too easily and too often. Then they commonly begin to do something else; but the thing is much more often an old thing than a new thing. What we really see is the perpetual revival of what are called new things, because they are neglected things. So Raphael and the Renaissance went back to what was older than mediævalism; so the Pre-Raphaelites went back to what was older than Raphael. So many modern

artists have gone back to Egyptian art because it was older than Greek art. So many of them have gone back to savage art because it was supposed to be primitive and unspoilt. They have a right to seek stimulation, though stimulants should be taken in moderation. But their renewal is relative. The other point in its favour is that it gets rid of a certain element called pride or impudence; which is an east wind blowing out of dry deserts and never did good to man or beast.

THE INTERIOR WORKING OF THE NEW ZEPPELIN.

FROM DRAWINGS BY THEO MATEJKO. (COPYRIGHTED.)



*Theo Matejko
on Board the Zeppelin
11 Sept. 28*

WITH ITS LARGE WINDOW-GLASS SURFACE AND PLAIN CONSTRUCTION AFFORDING AN EXCEPTIONALLY WIDE RANGE OF VISION: THE PILOT'S CABIN IN THE "GRAF ZEPPELIN."



WITH NOTHING BUT A BARE METAL LADDER BETWEEN HIM AND THE EARTH: AN OFFICER DESCENDING TO INSPECT ONE OF THE NEW ZEPPELIN'S ENGINES DURING HER TRIAL FLIGHT.

These drawings, made by an artist on board the new German airship, "Count Zeppelin," during its first flight, form an interesting comparison with the photographs of it given in our last issue. The "Count Zeppelin" is the largest airship yet completed and flown. The first drawing shows the pilot at the wheel in the control cabin—the forward gondola, from which he can survey a wide area of air and land, or sea surface. The artist has drawn a small black cat mascot tied to one of the girders, as good luck to "Count Zeppelin," on its first cruise! Control wires are seen passing through holes in the ceiling above the right-hand wheel. The second picture shows how any of the four side engines of the Zeppelin is to be reached during flight—by climbing down the metal struts which attach them to the ship, which may be travelling at full speed through the upper air at the time. Once inside the engine gondola, however, there is room to move about, and all parts are open to inspection during flight. The "Graf Zeppelin" is the largest airship yet completed (not so large as the British craft now building)—and her launch is a significant step in the post-war recovery of German industry. It will be recalled that the new Zeppelin made her trial flight on September 20, when, leaving Friedrichshafen at 8 a.m. in the morning, she flew westwards over northern Switzerland, then up the Rhine to Mannheim, and returned to Friedrichshafen at 5.30 p.m., by way of Frankfurt, Heidelberg, Augsburg, and Munich. The Zeppelin is about 750 ft. long and is built to carry a crew of thirty-six, twenty passengers, and fifteen tons of freight.

The Scientific Side of the Detection of Crime.

No. XVI.—HOMICIDES AND THE LABORATORY EXPERTS: PART I.*

By H. ASHTON-WOLFE, Assistant Investigator under Dr. Georges Bérout, Director of the Marseilles Scientific Police Laboratories.

I HAVE already described as fully as possible the rapid evolution of criminal investigation and the methods which are now applied to the most prevalent offences. In order to give a rough but comprehensive outline, I have found it necessary to omit many details, although when the scientist analyses a crime these details are of paramount importance. I hope,



FIG. 1. DUST AS EVIDENCE IN MURDER CASES: SOME PARTICLES OF SAWDUST FOUND IN THE CERUMEN (WAX) OF A CRIMINAL'S EAR (A MUCH ENLARGED PHOTOGRAPH).

however, once the broad basic elements have been grasped, to be able to come back to the minutiae. Although it is necessary to combat criminals in all the phases of their ceaseless warfare against the community, the experts have naturally devoted more of their time to the systematic detection of the three most dangerous offences—burglary, forgery, and murder—than to any other; and, of these three, homicides rank first, since life is more precious than property.

The word homicide must be taken generically as including all forms of killing with malice and intention, even if that intention was conceived only an instant before the deed. Although the law in many countries distinguishes between the various types of homicide when inflicting punishment, in England all killing is murder. The methods of the murderer are not so varied as one might be led to believe, and they have been divided into constantly recurring types. Although never exactly similar in detail, broad fundamental principles can be applied to all. Premeditated murders for gain, revenge, or sex motives predominate. Then come the homicides committed on sudden impulse, such as the shooting of a constable, detective, or caretaker of a building by a thief surprised at his work, who only kills to escape; and the murders due to an irresistible fit of rage or momentary snapping of mental balances. There are exceptions, of course. But these exceptions, such as the crimes of Jack the Ripper, are generally a manifestation of sex perversion, or homicidal mania.

The instant identification of a crime, and its classification as a recognised type, is very important: it is, indeed, the basis of scientific detection. As in algebra, the unknown x is reached by a simple formula for which only one or two known factors are needful. Although this principle is fairly obvious, the layman knows little of the true *modus operandi* when a crime is discovered. Detective fiction, with its fantastic and laboured clues, is largely responsible for this; yet it would help the investigators greatly and the criminal not at all if everyone knew exactly what are the important details of which the police should be informed at once, and how essential clues may be unwittingly destroyed. The murderer is never master of the situation to such an extent that he can avoid leaving traces which, to the expert, are merely so many sections of a puzzle such as he is accustomed to fit together. It is impossible to take a human life without fashioning a broad trail, and this knowledge should be the greatest deterrent to criminals.

The scientific investigator does not search for these traces at haphazard. They have been carefully classified (Fig. 2), and tables of frequency have been established, based upon the observations of criminologists in every country. I can only cite those which may be termed fundamental and constant. Finger-prints I have already described. These are nearly always discovered on the scene of a crime. The popular belief that criminals take the precaution of wearing gloves is a fallacy (Fig. 6). Few people can realise what a fearful thing assassination is, and how abnormal even the most brutish man must be during those terrible minutes when he is destroying a fellow creature. His heart is pounding and his lungs gasping for breath as though he had run a race. Every nerve is twitching and the hands almost refuse to obey the brain. Coherent thought is impossible, and fear—the primeval fear of the hunted beast—has displaced the power to reason calmly. Now imagine such a man struggling to open a safe, doors, drawers, or attempting to efface the traces of his act, to tie knots, or any of the possible contingencies which may arise, hampered by gloves. Almost inevitably, even though he intended to wear them, he will tear these off. A man who can resist this impulse and complete his dreadful work with gloved hands must be indeed a hardened professional with exceptional strength of mind. Thus, when the experts investigate a crime and find that the fingers were protected by rubber or leather, they have at once an invaluable clue to the personality of the malefactor. He is unquestionably a habitual criminal or a man endowed with extraordinary *sang froid* and will power. Therefore, the very absence of the tell-tale finger-prints narrows the field of research.

Footprints come next, for if the criminal did, in rare instances, actually wear gloves *all the time*, since he could not fly he must have left footprints (Figs. 5 and 7). A formula, worked out by R. A. Reiss, makes it possible, apart from the stride, to obtain the average height of an individual from the size of his feet—

$$F = \frac{8.6}{30} \left[\frac{H + 0.05}{\pi} \right] \quad \begin{matrix} F = \text{foot} \\ H = \text{height} \end{matrix}$$

A more complex formula allows for a maximum and minimum variation, and takes into consideration the difference in footgear. Furthermore, there is the shape and size of the shoe, and, above all, the manner in which soles, heels, and nails have worn. Nothing is so characteristic and personal as the manner in which every one of us wears away the sole and heel. The kind of shoe a man can afford to buy is also a clue not to be disregarded; and a knowledge of the firms who manufacture and the shops who sell them, and the ability to discriminate between the various shapes of shoes and boots, are part of the science of the criminologist. A series of tables of all European and American lasts, nails, rubber soles and heels, and iron protectors, has been compiled (Fig. 3). The form of the sole, its condition, and the type to which it belongs are always valuable indications from which the expert can learn whether the malefactor was a man, woman, or youth, and what his social position may be.

The manner in which the victim was killed is then ascertained. The weapons most frequently used are firearms, bludgeons, and knives, and these have been divided into definite categories, according to size, shape, and origin. Furthermore, there are the rope, cord, and scarf of the strangler, and the numerous poisons already described. The kind of weapon chosen and the way it was used are obviously most valuable clues to the identity of the criminal; and when it is not found on the spot the shape and

appearance of the wound infallibly indicate what it was. Frequently even the profession and the mentality of the murderer can thus be determined. A series of experiments carried out in the laboratories has made it possible to ascertain at once, in the case of a firearm, whether it was a revolver, automatic pistol, or gun, and the distance and direction from which the shot was fired. The form and composition of bloodstains comes next. They show if there was a struggle, whether the victim moved of his own volition, or whether he was moved by the murderer. It is naturally important to be able to determine whether the victim of an aggression was killed where the body was found, or whether the assassin carried it there; and this can be definitely learned from the manner in which the blood has dried on face and clothes. A typical instance of this kind is the famous Peltzer case.

Armand Peltzer, of Antwerp, had decided upon the death of a lawyer named Bernays. Peltzer was in love with Bernays' wife and wished to marry her. He sent for his brother and concocted one of the most cunning schemes ever conceived. With the help of a wig and grease-paint, the brother deliberately created a fictitious personality named Henry Vaughan, and for several months made this phantom being a familiar figure in Antwerp. Then he decoyed the lawyer to his office and shot him from behind. The bullet tore its way from the base of the brain to the chin, and the lawyer fell dead on the carpet. That abnormal state of mind which I have mentioned, and which seizes all murderers,



FIG. 2. RECORDS OF CLUES THAT LED TO THE CAPTURE OF CRIMINALS, COMPRISING FINGER-PRINTS, BURNT DOCUMENTS, BLOODSTAINS, DUST, FOOTPRINTS, AND OTHER OBJECTS—A REFERENCE COLLECTION IN THE LABORATORIES OF THE LYONS POLICE.

caused Leon Peltzer to rush away, terror-stricken, and quite forgetting that he should have placed the dead man in a chair. It had been the brother's plan that it should appear as though the lawyer had been shot accidentally whilst talking to the pseudo Henry

(Continued on page 626.)

SCIENTIFIC CRIME DETECTION:
CLUES THAT INCULPATED
MURDERERS.

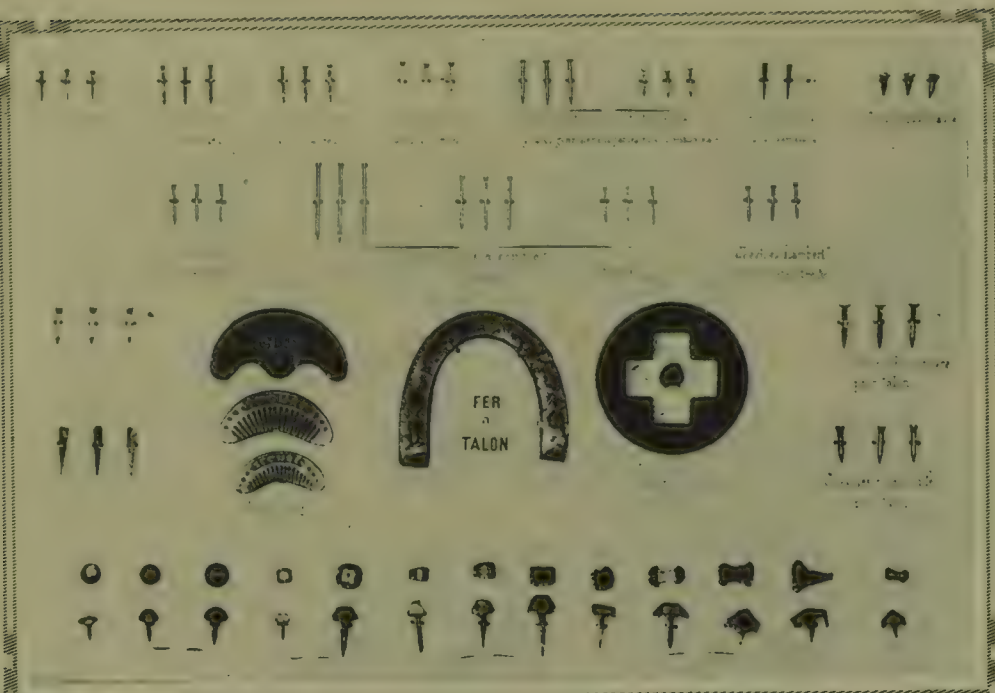


FIG. 3. THE EVIDENCE OF BOOTS AND SHOES IN MURDER CASES: TYPICAL EXAMPLES OF THE NAILS, RUBBER HEELS, AND HOBNAILS USED IN ENGLAND AND FRANCE, CLASSIFIED ACCORDING TO FREQUENCY.

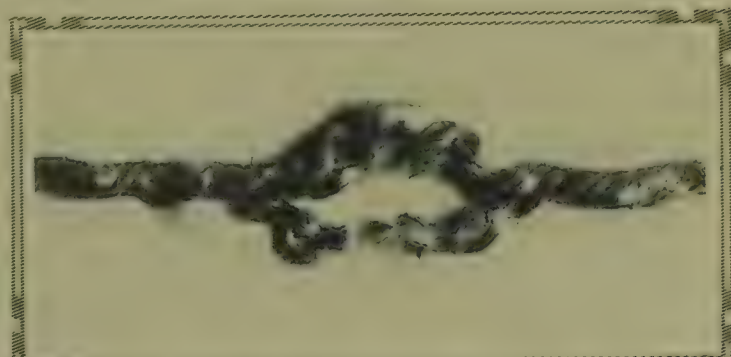


FIG. 4. FRAYED ENDS OF ROPE AS PROOF OF GUILT: (LEFT) ROPE USED TO TIE A WOMAN'S HANDS: (RIGHT) THE PIECE FROM WHICH IT WAS CUT—SHOWING HOW THE ENDS FIT.



FIG. 5. THE IMPRINT OF A NAKED FOOT FOUND ON THE SCENE OF A MURDER: AN EXAMPLE OF TRACES LEFT BY THE AVERAGE CRIMINAL.



FIG. 6. AN IMPRINT OF A HAND IN BLOOD: GRIM TESTIMONY THAT MURDERERS DO NOT GENERALLY WEAR GLOVES.

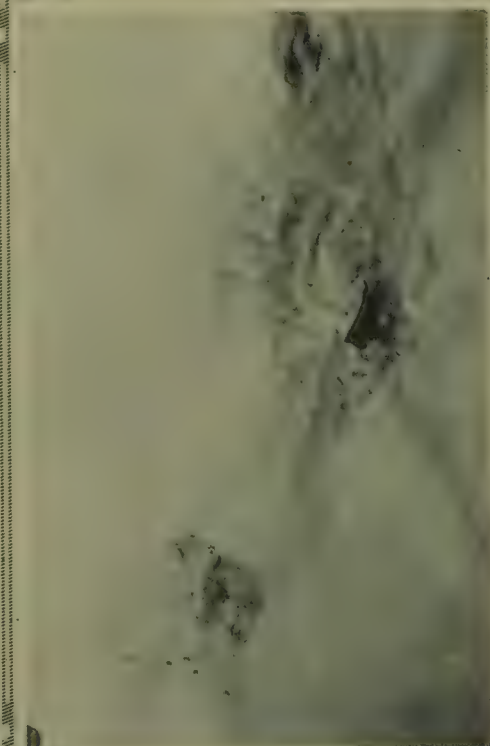


FIG. 7. BEARING TWO BLACK FRAGMENTS OF A BURNT DOCUMENT THAT PROVED GUILT: A CREPE RUBBER SHOE FOOTPRINT.



FIG. 8. SHOWING THE CREASES CAUSED IN STRANGLING A WOMAN: A HANDKERCHIEF, FOUND IN A MAN'S POCKET, WHICH CONVICTED HIM—AN INSTANCE OF FORGETFULNESS IN DESTROYING TRACES.

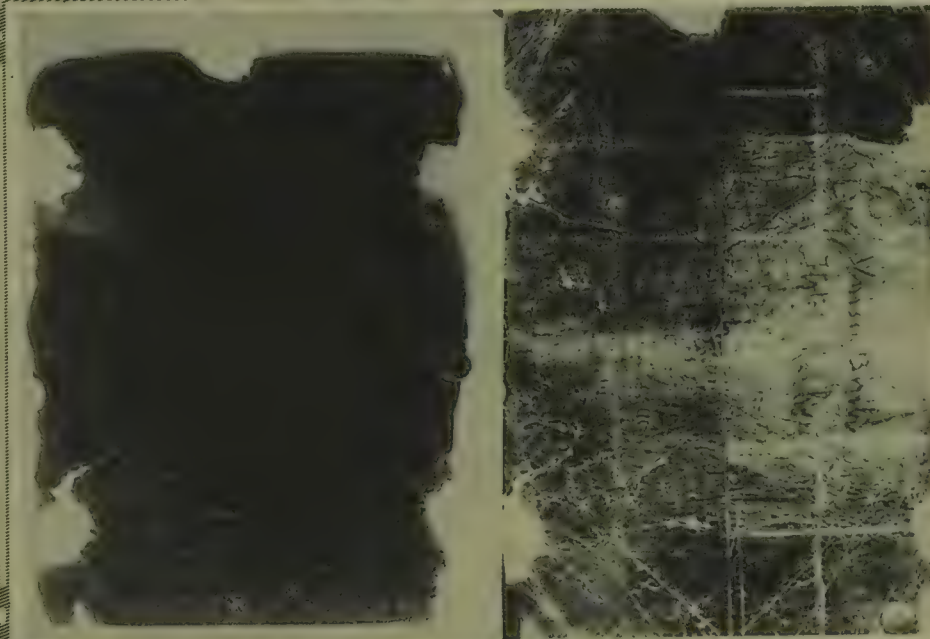


FIG. 9. A PIECE OF CARBON PAPER (I) SOAKED IN WATER AND CRUMPLED, WHICH, CHEMICALLY TREATED AND PHOTOGRAPHED, REVEALED (II) A CRIMINAL'S NAME AND ADDRESS.

In his article begun on the opposite page, Mr. Ashton-Wolfe discusses the various kinds of clues sought in cases of murder, and the scientific methods of the police in analysing them and preserving classified records for future use in detective work. Most of the objects illustrated above are mentioned in the article, either in connection with particular cases or by way of general explanation, and the figures are accordingly numbered to correspond with Mr. Ashton-Wolfe's references. Especially interesting is his allusion to the "fantastic and laboured clues"

popular in detective fiction, which, he declares, is largely responsible for the ordinary person's ignorance of the true *modus operandi* when a crime is discovered. Everyone, he urges, should know exactly what are the important details which should be at once communicated to the police; and should be able to avoid the destruction of essential clues. Among these, of course, are finger-prints and foot-prints, but there are other matters to be considered, and even dust on the scene of a crime may help in bringing the culprit to justice.

BOOKS OF THE DAY.

WE live in a matter-of-fact age, and modern taste in reading inclines rather to the actual than the imaginary; hence the vogue of biography and reminiscence, and the *personalia* of history. Though we can hardly be said to neglect fiction, here, too, we prefer to read about life as we know it than to roam the enchanted forest of romance. In adventure stories, as in drama (outside the glamorous atmosphere of Hammersmith), the picturesque "gentleman of the road" has given place to the gentleman "crook" in trilby and trousers.

The faculty for blending realism with fantasy is rare to-day, and we have no Swift or Defoe; not even a Paltock. Who on earth was Paltock? it may be asked. I confess that I could not have answered that question myself until I came to peruse "THE LIFE AND ADVENTURES OF PETER WILKINS." By Robert Paltock. Illustrated by Edward Hawden (Dent, London and Toronto; Dutton, New York; £1 1s.). I know now all that there is to be known, apparently (and that is not very much), about this forgotten eighteenth-century romancer. Paltock was an unobtrusive person—an attorney by profession—who dwelt secluded in Clement's Inn, and died in Back Lane, Lambeth, in 1767, and has become altogether a bit of a "back number." He had not the pushfulness of Defoe or Swift, and he lacked the Dean's wit and capacity for political satire. But he wrote a book which, regarded purely as a story, comes in not a bad third—though, of course, some lengths behind—to "Robinson Crusoe" and "Gulliver's Travels."

Why has "Peter Wilkins" been relegated to the great unread? After all, there is a good deal in a name, despite Juliet's remarks, and there is something about the name of Wilkins that does not exactly diffuse romance. It lacks the sounding qualities of his two great precursors, and to adopt it was almost asking for oblivion. The author, it is said, had originally called his hero "Pantile," which would have been much better, but he was over-ruled by his publishers, and apparently selected the name of a Bishop who wrote on the possibility of flying. Mr. Paltock was evidently one of those complaisant people who allow themselves to be persuaded against their better judgment. Imagine Dickens, for example, being induced to change the name of Mr. Pickwick to Mr. Tomkins!

If our epoch is an age of fact, it is also the Age of Flight, and it is up to us, at least, to appreciate a writer who was among the first—if not the very first—to invent a race of winged men and women able to fly under their own power, independent of petrol. That is the main feature and element of originality in "Peter Wilkins." From the moment that the lovely Youwarkee, having collided with one of her companions in the air, "crashes" on Peter's desert island hut, the reader is wafted beyond Crusoe's horizon and among beings unknown to Gulliver; not but what Brandleguarp, the Swangeantine capital, has some points of similarity, in its political and military affairs, to Lilliput and Brobdingnag.

"Peter Wilkins," first published in 1751, was a favourite with Scott, Lamb, Southey, and Leigh Hunt. This beautiful reprint, with its exceedingly clever illustrations, drawn in a vein of modernist-primitive fancy, and splashed with primary colours after the manner of early woodcuts, will doubtless win for the old tale a new generation of admirers, though a certain frankness in matters of sex may be held to disqualify it for the "juvenile" shelf.

I was slightly mystified, at first, by the fact that the delightful introduction by "A. H. B." (who is not mentioned on the title-page) is shown by footnotes to have been written in 1883, while the said notes were added by the same hand in 1913. Later, I discovered, from the contents list, that "A. H. B." stands for the late A. H. Bullen, who edited a reprint from the original edition in 1884 and died in 1920. It might have been well to state these facts in a new preface. Paltock's book, by the way, has in the past provided material for pantomime. It might suitably do so again, and the films, with their greater scope for picturing the fantastic, should be able to "go one better."

Leigh Hunt, in describing the charms of Youwarkee, wrote: "A Peacock . . . is a fine object, but think of a lovely woman set in front of an ethereal shell and wafted about like a Venus." This brings me to a pleasant little book lately added to the Library of Animal Friends—"TOM, MY PEACOCK." Being the Adventures of General Thomas Peacock, his rival Black Joe, and of his son Young Tom. Told by Frances Pitt, author of "Moses, My Otter." With twenty-one Photographs by the Author. (Arrow-smith; 5s.). Never having possessed a domain suitably extensive for the display of peacocks, I am unfamiliar with their habits, and did not know they were such pugnacious

and mirth-provoking birds. Remembering Solomon and Hiram, however, I should have thought them worthier of Biblical names than an otter. It seems hardly appropriate to class their magnificence with Dick, Tom, and Harry. Why not something high-sounding like Senaccherib, Zerubabel, or Tiglath-Pileser, albeit these might degenerate into Sen, Zerry, and Tiggly-Pilly?

With these gaudy birds Kipling's dictum that "the female of the species is more deadly than the male" does not seem to hold good; at any rate, it is Mr. Peacock who is "dressed to kill." His lady, however, comes into her own in fairyland, in a Serbian tale of the Golden Apple-Tree and the Nine Peahens, for the ninth peahen turned into a beautiful girl, while in her avian form she could wing it as well as Youwarkee to keep amorous appointments. This quaint story figures among some two dozen, all told, in "GREEN MAGIC." A Collection of the World's Best Fairy Tales from All Countries. Edited and Arranged by Romer Wilson. With illustrations in colour and line by Violet Brunton (Cape; 7s. 6d.). It is a little early to talk about Christmas presents, but Miss Romer Wilson's admirable collection, with its abundance of

until Fields, at his elbow, whispered something in his ear, when it tightened and he looked me in the eye with a certain intentness. The author of 'The Scarlet Letter' had been dead four years. His son gave way to the next person in the line, and I never saw Dickens again."

Mr. Hawthorne considers that "The Moral Aim in fiction has an effect like that of the Prohibition Law in the States—it encourages vice," and he includes Dickens in his general indictment. "Once 'The Pickwick Papers' were off his hands, (he) set sail as a reformer, and the result is an amusing and pathetic struggle between his enormous genius and humour and his moral sense." For all his eighty years, in fact, Mr. Hawthorne turns a modernist eye on those "pleasant hypocrisies" of the 1870's, when "the British Lion was purring, and nothing could stop him." His pen, moreover, moves with a *verve* and vitality that any young literary blood might envy. Too many writers of reminiscences can remember but cannot write. Mr. Hawthorne does both with equal felicity. He has given us a book of exceptional interest, not only on the personal and anecdotal side, from his large acquaintance with notable people, but also for its entertaining style and shrewd incidental criticisms on questions of art and taste.

These criticisms are aimed mostly at Victorian ethics and aesthetics, a matter which has some bearing on a study of six eminent Victorian women, entitled "BONNET AND SHAWL": An Album. By Philip Guedalla. With Portraits (Hodder and Stoughton; 12s. 6d.). Gaily emending Longfellow (without apology), the author thus indicates his theme—

Wives of great men all remind us
We can make our lives sublime.

His own motive is a little different: he does not tell us how to make our wives sublime. Rather he uses his accustomed touch of light and epigrammatic irony with agreeable and titillating effect. As thus: "The air of 1839 was heavy with impending nuptials. In the bright dawn of a new reign matrimony swept over England like a genial epidemic, and the land was loud with banns. . . . Disraeli and his Mary Anne, Victoria and her Albert, even Lord Palmerston and his delicious Emily prepared for felicity that season. . . . But the cloud of felicity hung nowhere lower or more richly charged than over Hawarden."

Three of the six—Mrs. Disraeli, Mrs. Gladstone, and Lady Palmerston—being thus accounted for, it remains to mention the others: Mary Arnold, Emily Tennison, and Jane Welsh Carlyle. Had Mr. Guedalla foreseen the cloud of dust lately raised by "Ephesian," he might have added to his cupboard the bonnet and shawl of Kate Dickens. Instead, he diverts himself (and us) by bestowing on certain celebrities "ideal" wives (as distinct from the six "real" ones) naming them severally Lady Muriel James, Sophia Swinburne, and Julie de Goncourt. In short, this is a book bedecked in the best and brightest Guedallan finery.

Victorian fashions have a more sinister aspect in the portrait frontispiece to "THE CASE OF CONSTANCE KENT." By John Rhode. (Illustrated; Bles; 10s. 6d.), a new volume in the Famous Trials Series. It is hard to believe that this fresh-looking Somerset girl, in a billowy Victorian coat, committed the terrible crime of fratricide to which she ultimately confessed, five years after the first proceedings against her (in 1860) had been stayed, thereby ruining the career of a famous detective who had prepared the case against her. Despite the painful nature of the case, it is one of the most interesting from a psychological standpoint, especially as the confession did not quite tally with the evidence, and some doubted whether Constance were really guilty. The author, however, does not share this view. There is an element of mystery, too, in her subsequent fate. The death sentence pronounced after her confession in 1865 was commuted. "She was released (we read) in 1885, and from that moment nothing is known about her. Local rumour is still busy with her name."

Those who prefer their crime in a fictitious (or should we say—ideal?) form, will revel in "GREAT SHORT STORIES OF DETECTION, MYSTERY, AND HORROR." Edited by Dorothy L. Sayers. 1214 pages. (Gollancz; 8s. 6d.). Here we have, not only a hair-raising anthology of "thrillers," including examples by many famous writers past and present, but a long and interesting introduction discussing the history and technique of detective fiction and its various sub-divisions. It should be of practical value to aspiring practitioners of the art, as well as to their ubiquitous "patient"—the reader. I do not recommend the occult section (with such a story as "Green Tea") as a bed book, except for psychically minded persons investigating the phenomena of nightmare.—C. E. B.



"MY EYES . . . WILL HAVE BEHELD THE DAWN OF THE DAY OF JUSTICE": A REMARKABLE DRAWING BY FRANK C. PAPÉ, ILLUSTRATING A STORY BY ANATOLE FRANCE.

The above drawing forms the frontispiece to a new volume of Anatole France's works translated into English, entitled "The Well of St. Clare." It illustrates a story called "The House of Innocence"—a dialogue between a medieval monk and a dying quarryman on the wrongs of workers and Christian ideals of labour—concluding thus: "The unhappy quarryman thought: 'This man . . . has proclaimed new tidings. I shall not see the end of my miseries, for I am going to die of hunger and exhaustion. But I shall die happy, for my eyes, before they close, will have beheld the dawn of the day of Justice.'"

Reproduced from "The Well of St. Clare." By Anatole France. By Courtesy of the Publishers, Messrs. John Lane, The Bodley Head, Ltd.

good pictures, must not be overlooked when the gift-book season arrives.

That season can hardly be mentioned in connection with "tellers of tales" without recalling the author of "A Christmas Carol," especially as his character has been so much canvassed of late, and may be said, like St. Paul, to have "fought with beasts at Ephesus." The number of those who have actually clasped hands with Dickens must be diminishing. Among them is Nathaniel Hawthorne's son, now in his eighties, who has recorded the meeting in a vigorous book of recollections entitled "SHAPES THAT PASS": Memories of Old Days. By Julian Hawthorne. With two Portraits (Murray; 16s.). The scene was the Boston Music-Hall, where Dickens was giving a reading from "David Copperfield," and the year was 1868. "The grip of his hand (we read) was impersonal,

FROM GRAVE TO GAY: HAPPENINGS AT HOME AND ABROAD.



LIVERPOOL EMULATES THE ANCIENT SYMBOLISM OF VENICE BY "WEDDING" THE SEA: A HUGE RING OF GILDED BRONZE CARRIED IN PROCESSION.
During the Civic Week at Liverpool the most striking event was the symbolic "wedding" of the city to the sea, a revival of the old custom at Venice known as the wedding of the Adriatic, when the Doge cast a ring into the water. At Liverpool the ring, which was of gilded bronze and 8 in. in diameter, was carried in the procession by two "Conway"



"I NOW THROW THIS RING INTO THE WATERS OF THE MERSEY": SIR ARCHIBALD SALVIDGE PERFORMING THE CEREMONY—SHOWING THE RING IN THE AIR AS IT FELL.
cadets. From a platform erected on the river-wall opposite the Dock Board offices, Sir Archibald Salvidge performed the ceremony. "As Venice," he said, "was sovereign of the Adriatic, so Liverpool's sovereignty over these northern waters is unquestionable. The people of Liverpool have revived the ancient symbolism of Venice to express their own gratitude to and love for the sea."



THE FUNERAL OF VICTIMS OF THE GREAT THEATRE FIRE IN MADRID: THE LONG CORTÈGE PASSING THROUGH THE CITY TO THE CEMETERY.

The funeral of those who perished in the terrible fire and panic at the Novedades Theatre in Madrid, on September 23, took place on the morning of the 25th. The chief mourner was the Prime Minister, the Marquis de Estella, representing the King of Spain, accompanied by members of the Government and civil and military authorities. Flags were flown at half-mast throughout Madrid, and the whole



ROWS OF CORPSES LAID OUT AFTER THE BURNING OF THE NOVEDADES THEATRE IN MADRID: A TRAGIC SCENE IN THE BAR OF THE THEATRE.

city wore an aspect of mourning. It was stated the day after the disaster that 85 dead had been found, but it was believed that there were about 100 bodies still in the ruins. Photographs of the burnt theatre appeared in our last issue (for September 29.) A public subscription, headed by the King of Spain, has been opened, and the Madrid Municipality contributed about £860.



THE ROYAL HORTICULTURAL SOCIETY'S FIRST FLOWER SHOW IN ITS NEW HALL: A STRIKING DISPLAY IN A FINE BUILDING.

The Royal Horticultural Society's autumn show opened, on September 27, in its halls in Vincent Square and Greycoat Street, Westminster. As our photograph shows, the new building is in a striking style of modern architecture. Roses and dahlias predominated at the show, the roses being staged in the old hall at Vincent Square. The exhibition aroused great interest and was attended by thousands of visitors.



THE DUCHESS OF YORK NAMES A NEW LINER AFTER HERSELF AND LAUNCHES IT ON THE CLYDE: THE DUKE AND DUCHESS AT THE SHIPYARD.
The Duke and Duchess of York on September 28 visited Glasgow, where the Duchess launched a new 20,000-ton Canadian Pacific liner, naming it after herself. "The Duchess of York" is the last of four sister ships recently built for the C.P.R. Company. The ceremony took place at the yard of Messrs. John Brown and Co., Ltd.

THE WORLD OF SCIENCE.

LOST LEGS.

By W. P. PYCRAFT, F.Z.S., Author of "Camouflage in Nature," "The Infancy of Animals," "The Courtship of Animals," etc., etc.

QUITE recently, it may be remembered, I discussed on this page the interesting problem presented by the degeneration and final complete loss of the wing in birds. One of my readers has suggested, and I am grateful for that suggestion, that I should give what may be called the complementary pictures—that is to say, something of cases where the hind instead of the fore limb has vanished.

We are faced by the same difficulties whichever of the two cases we elect to interpret. Some insist that we are here simply considering the results of "Natural Selection": that "Nature," for purposes of economy, removes useless organs—a most unconvincing argument when we come to consider it. For not even the liveliest imagination could visualise the gain of such economy, either to the individual or the race, when the process of reduction is so infinitely slow that it takes 10,000 years—perhaps twice as long—to reduce an organ whose functional activities have begun to wane, to a condition of vestige. The amount of useless tissue saved, and the consequent amount of energy saved by such reduction, can neither be weighed nor measured during the lifetime of any given individual, nor in any dozen successive generations.

Alternately, we are told that the gradual reduction of an organ, once functional, to a vestigial condition is due to the "cessation" of Natural Selection. But that is an equally unprofitable theme. Directly we

reduced to a homogeneous creamysubstance, or "chyle," which is absorbed by the blood directly, or passed into the blood by what are known as the lymphatic vessels. The purification of the blood by the lungs, liver, and kidneys is another function of this "laboratory."

But let us return to the material which has been passed into the blood-stream, and so carried to the

to a few inches in length, with but a vestige of the shin-bone surviving. No explanation of these differences is yet forthcoming. Compensation for the loss of a limb, and an equivalent in the development of new machinery to take its place, we find in the horizontal tail-flukes. How these came into being cannot, for the moment, be discussed,

because place must be found for mention of the loss of the hind-leg in other animals.

In certain lizards of the skink-tribe (Fig. 3) every gradation can be seen of this process of degeneration, which overtakes both the fore and the hind legs. Here the limb as a whole first undergoes a general reduction in size: the fore-limb exceeding the hind in the rate of this process of degradation. The digits begin to disappear one by one, till only the stump of a limb remains, and finally this vanishes. While this is going on, the body steadily elongates by the addition of more vertebræ to the back-bone, till at last a snake-like body results. The slow-worm and the "glass-snake" are other lizards in which a precisely similar transformation has taken place, in consonance, apparently, with a changed mode of life and feeding habits.

The python shows us, very unmistakably, that the snakes were originally four-legged. But all that now remains of these limbs is represented, in the living animal, by a pair of horny spurs, one on either side of the vent, shown in the left-hand photograph (Fig. 2). Dissection reveals the rest of the limb and a vestige of the hip-girdle. Here again, exactly as in the lizards just described, an increase in the number of the vertebræ has accompanied the degeneration of the legs. But more than this. The number of the ribs has vastly increased, and they have taken on the functions of the lost legs. For the free end of each pair of ribs is anchored to the ends of a scale which runs transversely across the belly. As the ribs are moved forward, they give that stealthy, uncanny, gliding movement to the body characteristic of the snake, by giving the scales of the belly a tilt, so that the hinder-edge of the scale gets a grip of the ground and thrusts the body forwards as the scale is brought back to the horizontal.

In the face of this evidence it is futile to deny that "use and disuse" are factors of evolution to be reckoned with. What we cannot at present account

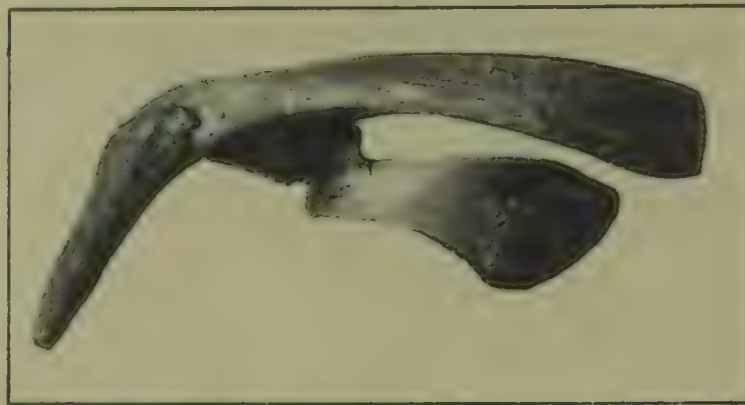


FIG. 1. REMNANTS OF A HIND-LIMB IN THE WHALE TRIBE, VARYING IN DIFFERENT SPECIES: THE THIGH-BONE, WITH VESTIGE OF A SHIN-BONE, IN THE SOUTH ATLANTIC RIGHT-WHALE.

In the South Atlantic right-whale the femur is still relatively large, and there remains also a small vestige of a tibia, or "shin-bone"; but the supporting hip-girdle, or pelvis, is as degenerate as in the porpoises.

starving tissues. Since this material is of a uniform standard quality, it is clear that the different tissues have each the power of converting this common substance into material peculiar to itself, and in proportion to the amount it has lost by waste. When, say, after a long walk, returning utterly fatigued, we presently sit down to a good square meal, in less than no time we feel "ourselves" again. That feeling of well-being is due to the fact that we have satisfied not merely a "stomach-hunger," but a muscle and nerve hunger, of which, as such, we were unconscious.

Now the tissues which have been most used will take up most of the converted food; what is left over will go to the remaining tissues in proportion to their need. Here, then, we come back to our "vestigial" organs. As these now perform no work, so they come to draw less and less on the common food-supply, which, indeed, must go to sustain some other part which has taken up the work hitherto performed by the now increasingly decrepit organ, which dies of mere inaction. How gradual and how seemingly erratic is this process, we may now consider. Let us take the loss of the hind-limb in the whale tribe, and those stranger creatures, the manatee and dugong.

In these creatures dissolution has proceeded to great lengths, for in all the land-mammals a varying number of vertebræ have become welded together to form a support for the hip-girdle. In these aquatic creatures, once land-dwellers, the vertebral column presents a most extraordinarily interesting condition, commonly quite overlooked. It presents, in short, a condition of arrested development. In all the land-mammals, including man, there is a stage in the embryonic development when the vertebral column presents a similar chain of bones throughout its length; that is to say, there are no "sacral" vertebræ—the bones welded together to support the hip-girdle. And this girdle, at the same time, is represented only by a bar of bone lying on either side, but quite apart from the vertebral column. This condition of things is precisely what we find in the whale tribe, manatee, and dugong. What is the "something" which intervenes at this stage to prevent the fulfilment of what has been begun?

In the matter of the leg we have no less puzzling features. In the porpoises and dolphins not a trace of this remains, but in the porpoises there is found a mere nodule of bone, answering to the thigh-bone. In the right-whales (Fig. 1) the thigh-bone is reduced

for is the means by which the effects of use and disuse are transferred to the germ-plasm. That is a real difficulty.



FIG. 2. EVIDENCE THAT SNAKES ORIGINALLY HAD FOUR LEGS: A SECTION OF A PYTHON'S SKIN, SHOWING VESTIGES OF HIND-LEGS IN THE FORM OF A PAIR OF HORNY SPURS.

The snakes have long since lost all traces of limb girdles and limbs, but vestiges of the hind-legs are still found in the python, in the form of a pair of horny spurs on each side of the vent. It has now almost as many legs as a centipede, the "legs" being represented by the ribs, of which there may be a number of pairs, each pair being attached to a horny transverse bar of scale, which, with the movement of the ribs, can be made to grip the ground by its hinder edge.

turn from mere abstract conceptions to the analysis of concrete cases we discover how inadequate they are.

The bodies of birds and beasts and fishes are extremely complex organisms, made up of sensitive tissues of many kinds; bone and muscle and nerve are the most obvious. How are these built up? For their well-being a marvellous chemical laboratory is kept constantly busy and at high pressure from birth till death. These bones, muscles, and nerves in the performance of their functions are inevitably wasted, as a consequence of the energy they expend in that performance; and this waste has to be made good by new material furnished in the raw state in the form of food. The "chemical laboratory" has to convert that food into living tissue to repair the waste. The process commonly begins in the mouth, is furthered in the stomach, and completed in the intestine. Here it is

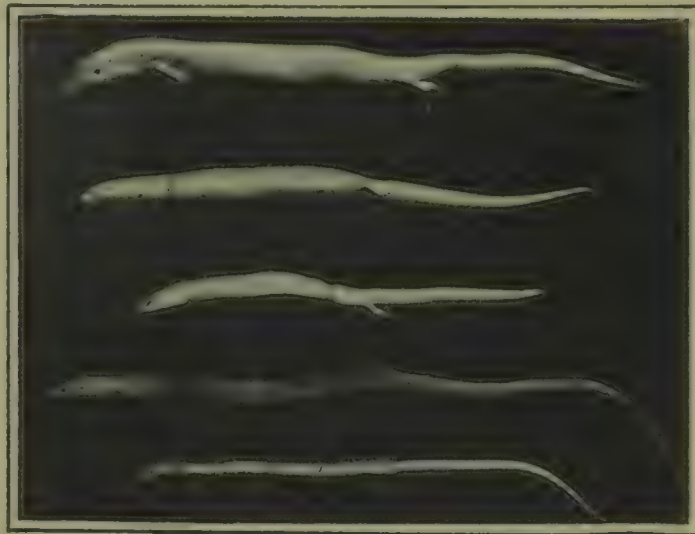
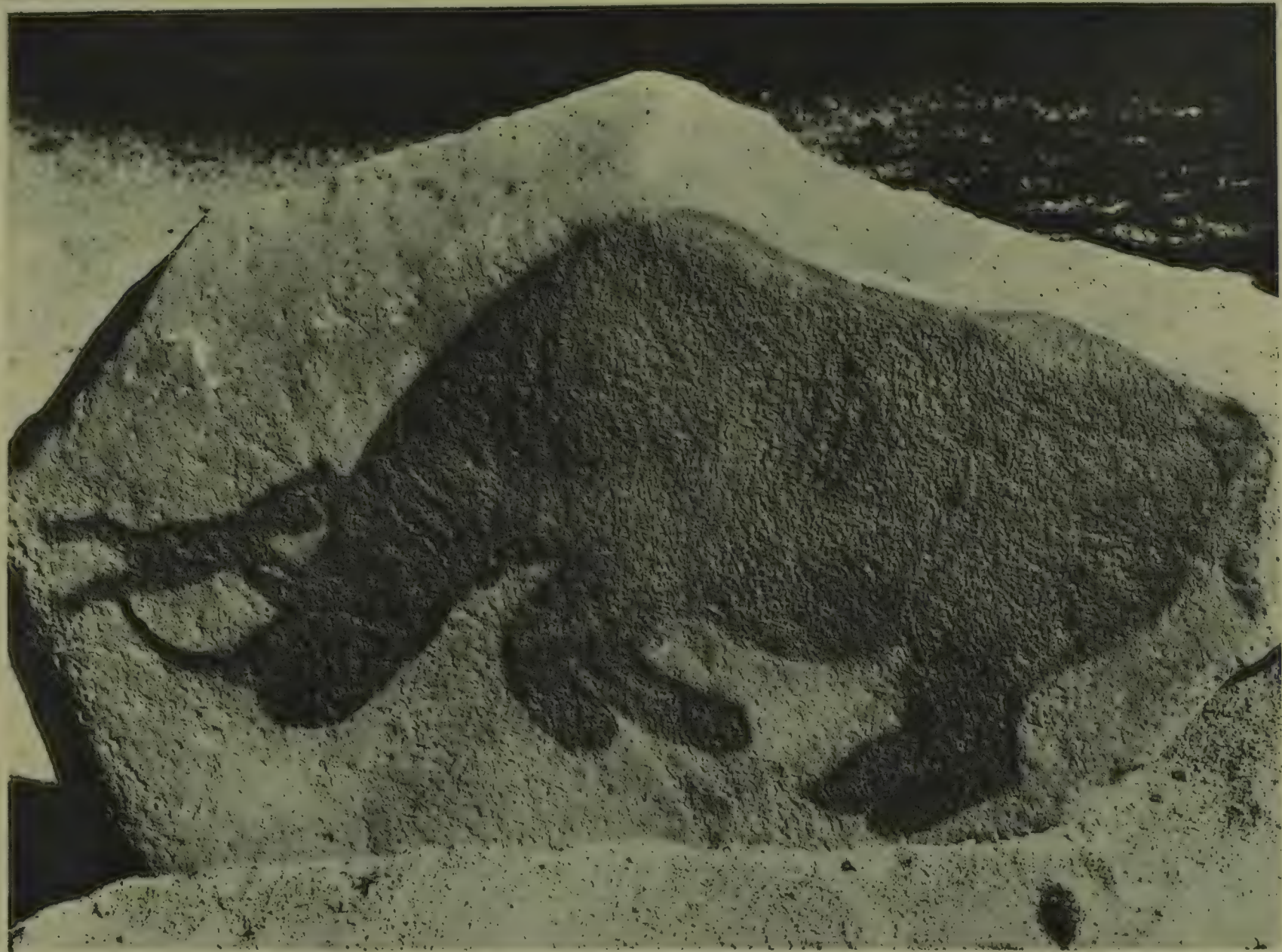


FIG. 3. LIZARDS EXHIBITING EVERY STAGE IN THE DEGENERATION OF THE LIMBS, THE HIND-LEG BEING THE LAST TO VANISH: SPECIMENS OF THE SKINK TRIBE.

The different genera of the skink tribe have preserved for us a remarkable series of successive stages in the disintegration of the legs. The hind-limb, it will be noticed, is the last to vanish. As the legs diminish, so the body lengthens towards a snake-like condition.

A 50,000 YEARS OLD TRAGEDY: A REMARKABLE PREHISTORIC PETROGLYPH.

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A BLACK RHINOCEROS TOSSING A "BOSKOP" BOY: A WONDERFUL ENGRAVING ON ROCK, IN SOUTH AFRICA, BY AN ARTIST OF THE PALÆOLITHIC PERIOD.

Our readers will recall that, in our issue of July 14 last, we gave a double-page reproduction of a wonderful rock engraving of a white rhinoceros covered with tick-birds, discovered in the south-western Transvaal, and attributed to the Later Palæolithic Period, from 25,000 to 50,000 years ago. The photograph, which had never before been published, was sent to us by Mr. Herbert Lang, of the Transvaal Museum, Pretoria, who described it as "probably the finest art-work of primitive man." Mr. Lang has since sent us this other unpublished photograph (reproduced above) of a similar prehistoric rock-engraving, described as "A Black Rhinoceros tossing a 'Boskop' boy, sculptured on basaltic rock by South Africa's men of the 'Stone Age,' evidently the first human tragedy ever recorded by an artist, the antiquity of which may exceed 50,000 years." Mr. Lang writes: "You have the opportunity of publishing for the first time a remarkable and striking series of pictures in the archaeological field. The main points are—certainty of great antiquity—the Transvaal and neighbouring regions are the greatest centre of this lithic art; precedence to and independence from 'Bushman' paintings; and important bearing on the question of the evolutionary centre of the human race." With his letter Mr. Lang enclosed the following more detailed description: "This unique petroglyph, from the fine collections of the Transvaal Museum at Pretoria, evidently represents the first graphic record of a human tragedy, a really splendid feat for an artist of the Stone Age. A 'Boskop' boy, gored by the horns of an infuriated Black Rhinoceros (*Diceros bicornis*), furnishes the incentive for so daring a subject. The initial onslaught, before the victim is tossed into the air, and the mighty upward thrust of the maddened brute, enhance the stirring effect and are rendered magnificently. One of the victim's legs is flung into the

air, and the right arm clinches despairingly the ear of his assailant. (The beasts of the field were unquestionably the great favourites of the cult inspiring these primitive engravers. Human figures were rather shunned, and the lack of clear details is characteristic of all. As a rule, a rather tall race is featured.) The adequate commemoration of such a disaster depended necessarily on observations made during the fleeting moments of rare chance. The easy mastery of so poignant an episode, and the general harmony of execution, furnish proof of a reasonably well-balanced intelligence. Like the superbly sculptured White Rhinoceros (mentioned above), this remarkable but more shallow bas-relief is also engraved upon excessively hard basaltic rock (crystalline diabase) with no other tools than the skilfully splintered edge of a stone. In artistic conception it holds second rank among the petroglyphs now known in South African collections. Exposed for untold ages to the erosive influences of the open veld of the south-western Transvaal, its dramatic spell has not suffered. Its surface, however, has acquired the heavy patinage typical of great antiquity. This striking example is also to be attributed to the early Neanthropic people of the later Palæolithic period ('Boskop,' or 'Smithfield' in South Africa, or Aurignacian in Europe). Reasonably sound proof of the enormous antiquity of the South African Palæolithic art is now at hand and will be published later. The previous estimates of 25,000 to 50,000 years will be rather too low than too high for these old petroglyphs. That an art centre as outstanding, comparatively, as that of Greece existed in very early times in the Western Transvaal and neighbouring regions cannot be challenged. Simplified features of this South African art were carried into North African lithic culture, from which that of Western Europe is, to some extent, derived."—(Copyright strictly reserved.)

THE MOON AND THE TIDES; WITH A DIGRESSION ON STELLAR CATASTROPHES.

By SIR OLIVER LODGE.

IN a recent exposition of the outcome of some of the work of Sir George Darwin (son of the famous naturalist) on tidal theory and the origin or birth of the moon, some sentences indicating what might be an ultimate result of tidal action, if the solar system lasted long enough, have apparently been misinterpreted as a prediction that the moon would one day crash down upon the earth. Well, such an event is not an utter impossibility. There are causes at work which, in an almost infinitely long time, might bring it about, if nothing else happened, and if everything went on as it is now. But I never intended any sensational statement on that subject, and do not regard it as a thing likely to occur. It is not to be supposed that the earth will last for ever: no merely material assemblage of particles can be infinitely durable; and there are so many other causes at work capable of effecting a change in the condition of the solar system that any consequence based on the continuance of things as they are now must be so extremely doubtful as not to be worth taking into account.

DIGRESSION ON STELLAR CATASTROPHES.

One would prefer not to speculate on the probable end of the solar system; but if one did speculate in that direction, one would have to give due regard to certain known facts—namely, that what are called "new" stars do blaze out in the heavens from time to time. Now a "new star" does not mean a newly created mass of matter; it merely means that an already existing body, which had been either dark or only faintly luminous, encounters something which makes it blaze up into vivid luminosity for a time—reckoned as a few months or years—and then gradually subside again into its previous dim condition. We have no reason to anticipate such a fate for any given specified star, such as the sun or any of its confrères; and yet, on the other hand, we have no reason for saying that any one of them is immune from such a disturbance.

The cause of such an eruption is now thought to be most probably an encounter of a star or solar system with a cloudy mass of matter such as a nebula. There are a great number of such nebulae, or gaseous masses, in the universe. The sun and other stars are moving at a high speed, and there is no reason why they should not occasionally encounter, or pass through, a portion of space which is not completely empty of matter. We see the operation, on a ridiculously minute scale, in what are called meteors, or shooting stars, which are small masses of matter, perhaps in some cases not much bigger than a cricket-ball or even a grain of sand, which are travelling round the sun in very elliptical or cometary orbits, and occasionally, and, so to speak, by accident, find some portion of the earth's atmosphere in their way. They are travelling at a speed of twenty-six miles a second as they pass the earth; and accordingly the friction even of highly rarefied air in the upper regions of the atmosphere is able to raise them instantly to white heat, and usually dissipate them into vapour, though some of the larger ones occasionally escape destruction and reach the earth's surface.

This well-known and familiar kind of thing may happen to larger bodies too, though much more rarely. The sun, in its isolated travel through empty space, is not one of the quickest stars; it is supposed to be moving, say, twelve or fourteen miles a second. But if, in the course of thousands, or perhaps millions, of years, anything like a nebulous mass of gas got in its way, it would no doubt blaze up with such vehemence that the earth itself would "melt with fervent heat." Such an event is a very remote possibility; and, inasmuch as all the known and visible bodies are at the present time tremendously distant, no one need be perturbed by such a contingency. It seems to me, however, a more likely end to the earth than any falling back of the moon.

This seemingly cruel and casual entrapping of a world by a nebula, like a fly buzzing helplessly in a spider's web, was what Tennyson probably had in his mind when he wrote ("In Memoriam, III.") apostrophising Fate or Sorrow, and not believing in her response—

"The stars," she whispers, "blindly run;
A web is wov'n across the sky;
From out waste places comes a cry,
And murmurs from the dying sun."

RETURN TO THE MOON AND THE TIDES.

What I have just said about a possible ending of the earth is foreign to an exposition of the moon and the tides; and I only mention it in order to remove any expectation of a return of the moon within any reasonable period. At the same time, other planets have satellites as well as the earth, and some of those satellites are already

satellite approach. And it should not be too difficult to explain why this is so.

Meanwhile, everyone knows that, as far as the earth-moon system is concerned, the month is longer than the day; and most people, perhaps, now know that in the case of one of the satellites of Mars, the Martian day is longer than its month; for Mars rotates on its axis in twenty-four hours, while its inner moon revolves in its orbit in seven hours. Hence the Martian satellite must be approaching the main body of the planet; and in some unknown period—which conceivably might be reckoned in only thousands of years—may precipitate itself down on the surface of Mars. Now let us see if we can give any idea of how the tidal action can bring these things about.

The older Newtonian astronomy treated the bodies in space, for the most part, as if they were rigid, unalterable in shape, incapable of deformation; as if, in fact, they were "particles" whose size and details might be ignored,

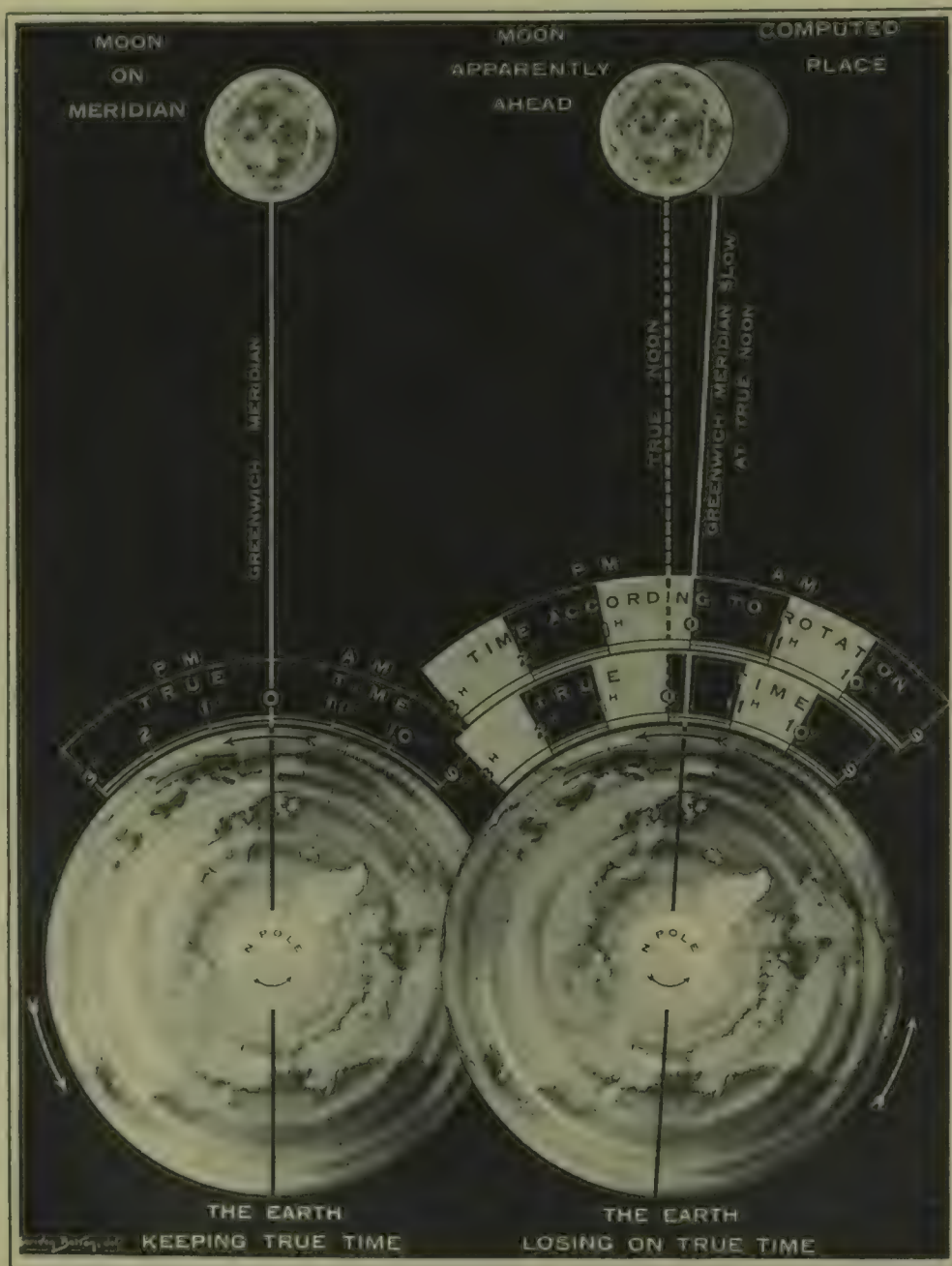
because they were so far apart, and because the law of gravitation enabled them to act on each other as if their mass were concentrated at their centre—a fact, however, which Newton knew was only accurately true for a homogeneous sphere. But Newton also knew, and we know from living on it, that the earth is not a sphere, but a spheroid, and that it is not completely rigid; for distributed on its surface is a mobile ocean, which yields to deforming forces, even though its solid parts are now surprisingly rigid. But this was not always so. There was a time when the whole earth was molten and plastic, so that deformations, or "tides," could be generated in the body of the earth itself. The plasticity and mobility is now, however, nearly all confined to the water, which, accordingly, being pulled by the moon and sun, is elevated over large regions, some feet above the average level; in other words, the earth is deformed by the gravitational forces acting upon it. And though the elevation of the ocean is so slight, yet it has important consequences, especially to navigators, and accounts for the tides which wash up our channels and estuaries twice a day.

The tides can be treated in several ways, but the most elementary and, so to speak, childish method is to think of two great low-lying humps or protuberances, held still chiefly by the moon, with the earth rotating under them; so that they travel round its surface in, roughly, about twenty-five hours, which is the length of the day or period of the earth's revolution relatively to the moon. The result is friction and dissipation of energy. The energy of the tides is necessarily partially wasted on the coasts; and all that waste of energy is at the expense of the earth's rotation. The earth may be said to be rotating inside a friction brake, of which the handle is held by the moon.

The earth's rotation is, therefore, slowly, very slowly, being wiped out. Each day is slightly longer than the one before, the difference being exceedingly small, only the 1/240-millionth of a second, or thereabouts. But the effect, though extremely minute, is cumulative; it always acts in one direction, it is never reversed. I do not say that there are no reversals, for if we take every cause into consideration, it would appear that there are; but still it remains true that the tidal influence—that is to say, the friction of the water on the earth's crust—is always such as to dissipate the energy of the earth's rotation and lengthen the day.

In Newtonian astronomy, as elaborated by Laplace, the orbits of the planets were constantly changing, sometimes becoming more, sometimes less, elliptical; the planets perturb each other, and accordingly they sometimes approached nearer, and sometimes receded further from, each other, or from the sun; and it then became a question whether these perturbing causes were likely to lead to catastrophe. Laplace was able to show that they would not: the forces were all periodic, like the swing of a pendulum; what was done

[Continued on page 636.]



THE MOON APPARENTLY AHEAD OF ITS COMPUTED POSITION: A RESULT OF THE EARTH'S RETARDED ROTATION AND VARIABLE AXIAL SPIN, CAUSING A LONGER DAY.

As an interesting comparison with Sir Oliver Lodge's article, we reproduce here Mr. Scriven Bolton's drawing that appeared in our issue of July 14 last, with the following note by him. "The terrestrial day is slowly but surely lengthening. Whether our globe will continue to slow down on its axis, we cannot tell. The rate of increase may at first appear to be quite a trivial matter, amounting, as it does, to only a hundredth part of a second per century. Still, it is sufficient to produce discordant results in the computed positions of the heavenly bodies; for it was this observed error which led to the discovery of the Earth's retardation. This retardation is five times greater than could possibly be due to tidal friction, or to a change in the level of the ocean bed. While the real cause is unknown, it is thought to be due to pulsations of the Earth's crust. The speed with which the Earth rotates is never really constant. At present the Sun, Moon, Mercury, and Venus are nearly half a minute ahead of their computed positions. . . . When the Earth exhibits marked fluctuations in its rotational velocity, precisely the same fluctuations are manifested, in a minor degree, by the Moon during its voyage around the Earth."

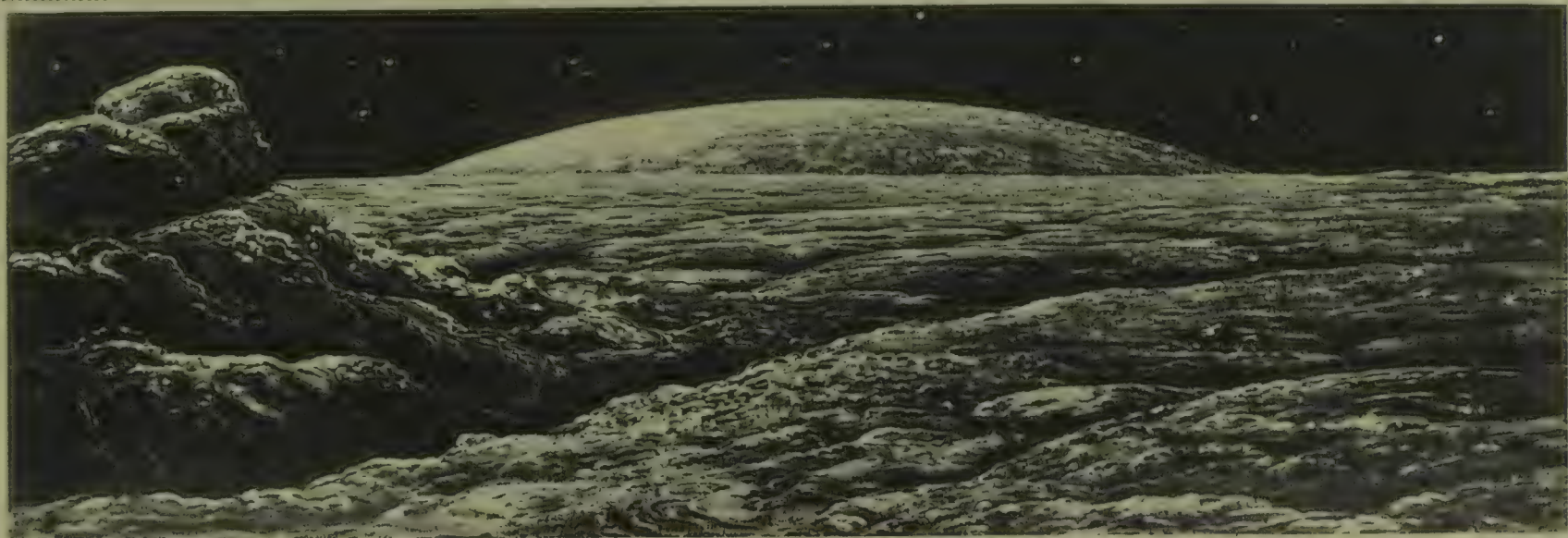
Specially Drawn for "The Illustrated London News," by Scriven Bolton, F.R.A.S., F.R.S.A., etc. (Copyrighted.)

on, the way to approach their planet; that is to say, the central body round which they are revolving. Calling the period of revolution of the satellite a month, and the period of planetary rotation a day, as is the common practice, then, when the month is longer than the day, the effect of the tides is such as to make the satellite gradually recede. Whereas, when the day is longer than the month, the tidal influence is such as to make the

changing, sometimes becoming more, sometimes less, elliptical; the planets perturb each other, and accordingly they sometimes approached nearer, and sometimes receded further from, each other, or from the sun; and it then became a question whether these perturbing causes were likely to lead to catastrophe. Laplace was able to show that they would not: the forces were all periodic, like the swing of a pendulum; what was done

A "BRAKE" ON THE EARTH'S ROTATION: THE MOON AND ITS SURFACE.

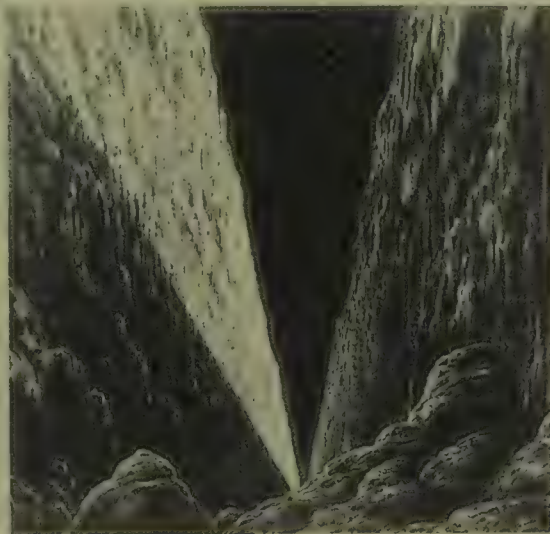
FROM DRAWINGS BY LUCIEN RUDAUX, BASED ON THE LATEST SCIENTIFIC EVIDENCE.



THOUGHT TO REPRESENT THE FIRST STAGE IN THE FORMATION OF THE SO-CALLED "CRATERS" ON THE MOON: A MOUND ON THE LUNAR SURFACE NEAR "ARAGO," ON THE "SEA OF TRANQUILLITY," RECONSTRUCTED BY A FRENCH ARTIST.



OUR SATELLITE AS WE SEE IT: MOONLIGHT ON THE EARTH COMPARES STRIKINGLY WITH THE GARISH BRIGHTNESS OF "EARTH LIGHT" ON THE MOON.



SHOWING THE BLACK SKY AND HARSH LIGHTING PRODUCED BY ABSENCE OF ATMOSPHERE: THE SCENE AT THE BOTTOM OF A GREAT CREVASSE.



WITH SHADOWS UNRELIEVED BY LIGHT ATMOSPHERICALLY REFRACTED: LUNAR NIGHT WITH THE BRILLIANT EARTH HIGH IN THE HEAVENS.



IN A LANDSCAPE UNRELIEVED BY WATER OR VEGETATION: A VIEW OF ONE OF THE VAST LUNAR CREVASSES, SOME OF WHICH RUN OVER 40 MILES ACROSS THE SURFACE, HALF A MILE ACROSS WITH PERPENDICULAR SIDES, WHILE THE LACK OF ATMOSPHERE TAKES AWAY FROM THE MOUNTAINS ON THE HORIZON THE FEELING OF DISTANCE.

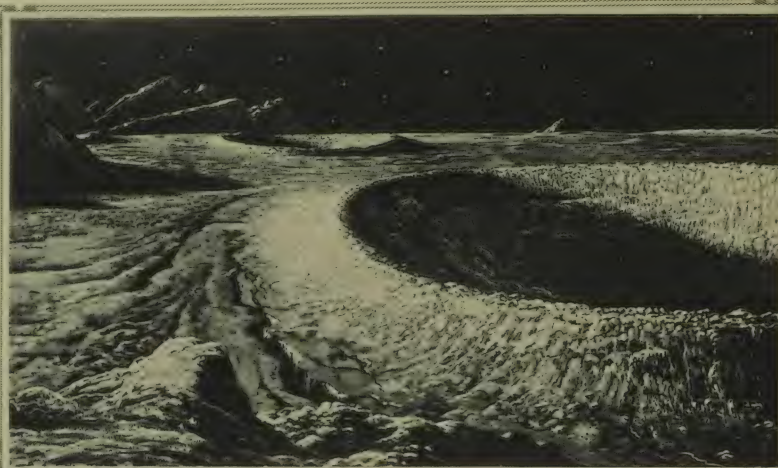
How "the earth may be said to be rotating inside a friction brake, of which the handle is held by the moon," is explained by Sir Oliver Lodge in his article opposite, where he discusses the fascinating question of tidal influences. In this connection we reproduce above, and on pages 602 and 603, some remarkable studies of lunar landscape, which, though imaginary, are founded on scientific data. They are the work of a French artist, M. Lucien Rudaux, who supplements his drawings with a descriptive account. Ever since Galileo discovered the true nature of the moon's surface, M. Rudaux points out, the appearance of a world geologically so closely akin to ours has exercised a great fascination

over the imagination. Yet, lacking atmosphere, the moon has lost all softness of outline, and remains a cracked and scarred world haunted by fantastic and garish lights and shades. The long, pointed shadows thrown by some of the lunar mountains at some periods during her day give an incorrect impression of dolomite-like spires soaring out of the lunar plain. But the long shadow is the effect of the oblique rays of the sun, and the mountains present quite a terrestrial outline, as shown above. The lack of an atmosphere intensifies the light on the gleaming surfaces, and leaves the shadows—except where reflected light reaches them—absolutely black.

ON THE MOON, WHOSE ROTATION THE EARTH'S TIDES

FROM DRAWINGS BY LUCIEN RUDAUX, BASED ON THE

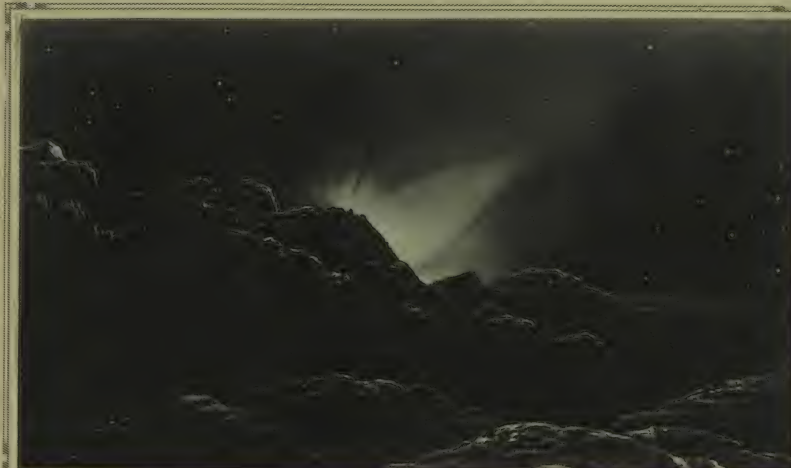
A TYPICAL LUNAR
LANDSCAPE
WITH SMALL
CRATERS—PERHAPS
OF VOLCANIC
ORIGIN:
SHOWING THE
SURFACE MADE
UP OF BARE
ROCK, UNMITIGATED
BY SOIL OR
VEGETATION.



SHOWING THE
EARTH
SURROUNDED
BY A THIN
SUNSET-COLOURED
RING OF
ATMOSPHERE:
AN ECLIPSE OF THE
SUN AS IT WOULD
APPEAR FROM THE
MOON, WITH THE
BRIGHT "ZODIACAL
LIGHT" SEEN IN
ITS FULL GLORY.

HAVE STOPPED: LUNAR LANDSCAPE PICTURED BY SCIENCE.

LATEST SCIENTIFIC EVIDENCE. (COPYRIGHTED.)



WHERE THE
GLORIES OF THE
SOLAR
PROMINENCES,
UNOBSCURED BY
ANY ATMOSPHERE,
WOULD APPEAR
AS ROSEY FLAMES:
A LUNAR SUNRISE
WHICH TAKES A
FULL HOUR.



SHOWING THE
STRAIGHT SHADOW
OF THE PLAIN
CREEPING UP THE
FACE OF THE
MOUNTAINS:
AN IMAGINARY
VIEW OF THE
LUNAR
"APENNINES"
AT SUNSET.

"The tides produced in the moon's substance by the pull of the earth," writes Sir Oliver Lodge in his article on page 600, "have wiped out its rotation with reference to the earth, so that it always turns the same face towards us." Similarly, he explains, the weaker pull of the moon is slowing down the rotation of the earth, by infinitesimal degrees. "The earth's rotation is, therefore, slowly, very slowly, being wiped out." This is only one of the many fascinating questions which Sir Oliver discusses regarding the relations between the moon and the earth, as well as the remote possibilities of stellar disturbances. By way of general illustration of the lunar problem, we give above, and on page 601, some very striking studies of the moon's surface, based on scientific data, recently published by a French artist, M. Lucien Rudaux. In an accompanying description, M. Rudaux states that the absence of atmosphere on the moon, while it makes the lunar landscape harsh and garish, with unmodulated light and shade and great absence of that "feeling" of distance, must give rise to some surprisingly

beautiful phenomena in connection with sunlight, which our atmosphere renders invisible. The lunar sunrise, which, owing to the slowness of our satellite's movement, takes a full hour to be completed, gives a full view of the rosy and flame-coloured prominences as the edge of the sun appears over the horizon. These solar prominences of fiery matter shooting out thousands of miles into space can only be seen with a telescope from the earth. When the sun is eclipsed by the earth, seen on the moon as four times as large as the sun, it would appear surrounded by a sunset-coloured ring of her atmosphere; beyond which the "Zodiacal light," a bright sphere surrounding the equatorial regions of the sun, rather after the fashion of Saturn's rings, could be seen extending. Altogether it seems as though the moon, while incapable of supporting life, would yet be a paradise for astronomers, who find in the terrestrial atmosphere their chief, curse and bane.

IN THE TRACK OF A HURRICANE: DEATH AND DEVASTATION IN FLORIDA.



A SCHOOL WRECKED AND UNROOFED AT LAKE OKEECHOBEE IN THE MOST SEVERELY STRICKEN DISTRICT: THE SCHOOL BELL EMERGING FROM THE FLOOD, AND DESKS IN PLACE ON THE FLOOR.



"A HODGE-PODGE SCENE RESEMBLING ATHENS AND CAPE COD THROWN TOGETHER": BOATS AND SHEDS BLOWN NEAR A CLASSICAL BUILDING AT WEST PALM BEACH.



REMOVING THE BODIES OF VICTIMS IN THE STORM-STRICKEN LAKE DISTRICT OF FLORIDA: CARRYING ONE OF THE COFFINS TO A LORRY AT PAHOKEE AFTER THE GREAT HURRICANE.



A TIMBER-BUILT HOUSE OVERTURNED IN ITS ENTIRETY BY THE FORCE OF THE WIND: REMARKABLE HURRICANE EFFECTS AT LAKE WORTH, FLORIDA.



THE WRECK OF THE SCHOONER "MARCHIONESS": A YACHT BLOWN ASHORE AT WEST PALM BEACH, WHERE THE DAMAGE WAS ESTIMATED AT £6,000,000 TO £15,000,000.

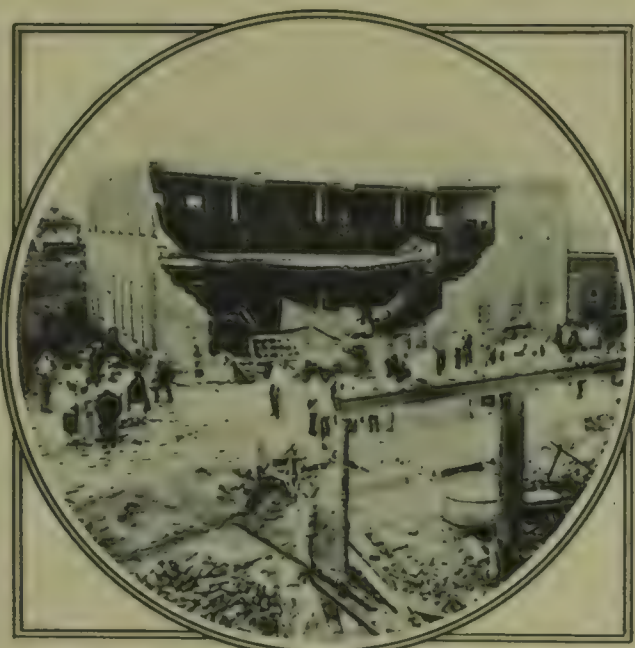


AFTER THE HURRICANE HAD SWEEPED ACROSS FLORIDA TO THE MIDDLE WEST: ALL THAT WAS LEFT OF A LARGE GARAGE AT DAVIS, SOUTH DAKOTA.

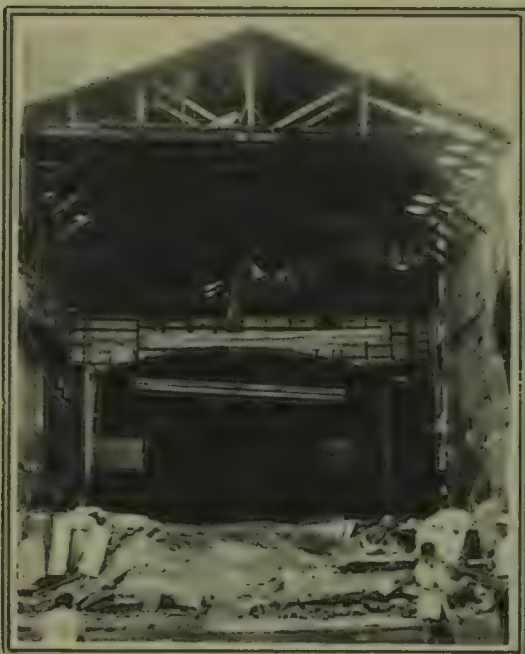
The great hurricane which, after devastating Porto Rico and other West Indian islands last month, struck the coast of Florida, on September 16, and swept across that State in a belt eighty miles wide, caused enormous havoc and loss of life. The estimates of the number of dead and of damage to property kept continually increasing as the work of rescue and salvage progressed. On September 21 it was stated that on the east shore of Lake Okeechobee, and in the flooded fields to the south, the dead lay everywhere; already 537 whites and blacks had been buried, but 71 more bodies were stacked in a pile at Pahokee. The Governor of Florida, in asking aid from the mayors of all towns in the State, said that there were

16,000 people homeless and 8000 without a change of clothing, while 95 per cent. of homes and business property had been either destroyed or damaged. The chairman of the Red Cross in Palm Beach County, on the same date, estimated the dead as between 700 and 800, and the material damage in the county from £6,000,000 to £15,000,000. Later reports said that more and more bodies were being discovered in the flooded region of Lake Okeechobee, and that the number of lives lost there must have been nearer 1500 than 1000. To add to the distress, the water of the lake and the flooded area had begun to rise again, rendering further salvage work for the time almost impossible.

STORM FURY IN PORTO RICO, PALM BEACH, AND THE MIDDLE WEST.



THE SIDE OF A CHAIR FACTORY TORN OUT BY THE FURY OF THE WIND: ANOTHER SCENE OF HAVOC AT ROCKFORD.



HOW THE ROOF OF THE UNION FURNITURE COMPANY WAS BLOWN OFF AT ROCKFORD, ILLINOIS: A FACTORY WHERE EIGHT PERSONS WERE KILLED WHEN THE HURRICANE SWEEPED THROUGH THE CITY.



THE HURRICANE'S STRENGTH AT SAN JUAN, PORTO RICO, WHERE THE TRES BANDERAS THEATRE WAS COMPLETELY DEMOLISHED.

TIMBER BUILDINGS WRECKED AND DISPLACED AT DAVIS, SOUTH DAKOTA.



THE WHOLE FRONT OF AN HOTEL RIPPED OPEN BY THE HURRICANE AT PALM BEACH, THOUGH THE FURNITURE WAS LEFT UNDISTURBED.



DESTRUCTION AT WEST PALM BEACH: A STONE-BUILT HOUSE WITH ITS TIMBER FRONT BLOWN INTO THE WATER.

Many lives were lost and considerable damage to property resulted from the hurricane which swept over Porto Rico on September 13, and subsequently swept across large tracts in the U.S.A. According to the "Times," reports from Porto Rico stated that the hurricane reached its greatest force at 2.30 p.m. on the 13th, after the wind had been blowing for about six hours at a rate of a hundred miles an hour, and occasionally rising to 150 miles an hour. Before being carried away the anemometer at the Weather Bureau registered 132 miles an hour. The

hurricane when it reached Rockford, Illinois, did considerable damage to factories and private residences, and caused death and injury to many inhabitants. At West Palm Beach, the wind reached a velocity of 135 miles an hour and unroofed many houses and other buildings. Waves from 40 to 50 ft. high tore away huge sections of concrete flags on the boulevard. Later news stated that the devastated area in Florida covered sixty-five square miles, and that the entire district was inundated, all the houses being wrecked and all animal life destroyed.

PERSONALITIES OF THE WEEK: PEOPLE IN THE PUBLIC EYE.

THE REV. W. A. SPOONER, D.D.
Famous Oxford Don who has just celebrated his golden wedding. Warden of New College, 1903-25. Originator of "Spoonersisms." Married a daughter of late Bishop of Carlisle.

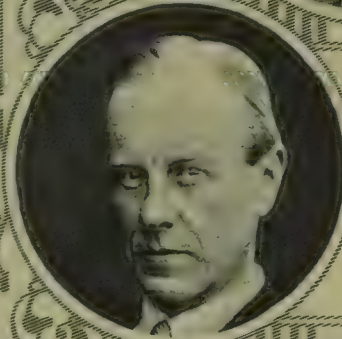


MISS JESSIE WESTON, D.LITT.
(Born, 1850; died, September 29.) Devoted her life to the study of Arthurian romance and published many books and translations. A founder of the Lyceum Club.



M. VENIZELOS AND SIGNOR MUSSOLINI.
M. Venizelos, the Greek Premier, who has since come to London, is here seen in Rome with Signor Mussolini, on the occasion of their concluding recently a Græco-Italian Pact of friendship and arbitration. M. Venizelos is seen signing the document, with Signor Mussolini standing beside him.

SIR WALTER PRESTON, M.P.
Headed the poll in the Cheltenham by-election, thus retaining the seat for the Conservatives. Formerly M.P. (U.) for Mile End, 1918-23. Company Director and M.F.H., Avon Vale, 1914-18.

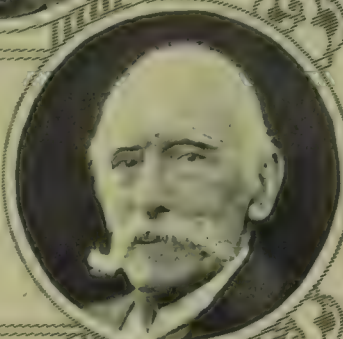


THE BISHOP OF GLOUCESTER.
Dr. A. C. Headlam, Bishop of Gloucester, was the President of the Church Congress, which opened at Cheltenham on October 2. Formerly Professor of Divinity at Oxford and Canon of Christ Church.



SIR HENRY WICKHAM.

(Born, 1845; died, September 27.) Founded the plantation rubber industry, in 1876, by bringing from Brazil seeds that formed the parent stock of all rubber trees in the East. Explorer, and Colonial official.



COMMANDER G. M. DYOTT.
Leader of recent relief expedition in search of Col. Fawcett, lost in Brazil with his son and a friend. Found they had been killed by natives. Returned safely to Para on September 25.



MR. J. TAYLOR AND MR. J. P. WANDS.
Mr. Taylor, of Denny, Scotland, with Mr. Wands, of Glasgow, as his passenger, is here seen ascending Ben Nevis (4406 ft.) in a motor-cycle and side-car. He reached the top in 4 hours 49 minutes, a record for such a vehicle. A previous cycle-car ascent (before the war) took several days.

THE NEW SHERIFFS OF THE CITY.
Alderman Sir William Alfred Waterlow (on the left above) and Major William George Coxen, the new Sheriffs of the City of London, were formally admitted to office at the Guildhall on September 28. They then gave their inaugural breakfast at Salters' Hall.



C. J. H. TOLLEY (RIGHT) AND E. R. WHITCOMBE.
Mr. C. J. H. Tolley won the French Open Golf Championship, at La Boulie on September 27, with a score of 283 for 72 holes. The six next best scores were—H. C. Kinch (284), E. R. Whitcombe and T. H. Cotton (286 each), George Duncan, A. Boomer, and H. C. Jolly (287 each).



LADY STUDD.
The first Princess to be Lady Mayoress of London. Second wife of Sir Kynaston Studd, the newly elected Lord Mayor. Formerly known as Princess Alexandra Lieven. Daughter of the late Prince Paul Lieven, Grand Master of Ceremonies at the Court of the Emperor Alexander II. A keen horsewoman.

SIR CHARLES WAKEFIELD.

SIR KYNASTON STUDD.
The new Lord Mayor of London-elect. Born, 1858. Formerly famous as a cricketer. Played for Eton against Harrow and captained the Cambridge eleven four times against Oxford. Became a prominent Magistrate. Elected Sheriff of the City in 1922.



A GREAT BRIDGE THE KING WILL OPEN: BRITAIN'S LARGEST ARCH.



THE NEW SUSPENSION BRIDGE AT NEWCASTLE-ON-TYNE, WITH ITS GIGANTIC ARCH, WEIGHING 4500 TONS :
A GREAT ENGINEERING STRUCTURE TO BE INAUGURATED SHORTLY BY THE KING.

On Monday, October 10, his Majesty the King will open the new Suspension Bridge over the Tyne between Newcastle and Gateshead. This great bridge, whose construction was a remarkable feat of engineering, has the distinction of possessing the largest arch in this country, with a span of 531 ft. from shore to shore, and weighing no less than 4500 tons. In our issue of March 3, we illustrated the culminating and most critical phase of this colossal work; that is, the

linking-up of the two halves of the arch at the central point on the top, 200 ft. above the river. The two sides were suspended by cables from tall masts on either bank, and were lowered towards each other so gradually that no movement was perceptible, even by persons on the top at the moment of contact. The operation of closing the two wings was watched by large crowds and civic officials, and the final junction was acclaimed by cheers and the firing of rockets.

FROM THE WORLD'S SCRAP-BOOK: NEW ITEMS OF TOPICAL INTEREST.



IN THE MODERNISED "ZOO" AT LEIPZIG: AN ELEPHANT APPRECIATES HIS NEW QUARTERS AND MAKES FRIENDS WITH VISITORS.

The Zoological Gardens at Leipzig, we understand, have been reconstructed on modern lines, and elephants can roam free in spacious open-air quarters, divided from the public by a deep ditch. The edge of the platform on which the elephant is seen standing is studded with spikes.



"SEE HOW THEY RUN!" THE UNDERGROUND RAILWAY QUOTES THE FARMER'S WIFE ON A NEW TRAIN-INDICATOR.

This new train-indicator, headed "See How They Run," has just been installed at Westminster Station on the Underground. Pointers on six revolving dials, each connected with a station on a different line, mark the dial when a train passes. The six dials are lettered respectively District, City, Central London, Bakerloo, Piccadilly, and Hampstead lines.



AN ELECTRIC SUBSTITUTE FOR A TOWEL: A NEW GERMAN HAND-DRYING APPARATUS.

At an exhibition in Leipzig called (according to the correspondent who sends this photograph) "the German Inn," is shown the above electrical apparatus for drying the hands after washing.



"HALT! DO YOU KNOW MUNICH?" A WELCOMING HAND ON A "KIOSK" WITH ADVICE TO VISITORS.

"Visitors to Munich," we read, "see this giant hand immediately outside the station on their arrival. It asks them if they know the town. A plan can be consulted at the base, and its sides bear printed information about places of interest."



OPTICAL APPARATUS EXTRAORDINARY: A "BATTERY" OF LENSES AT THE REFRACTION HOSPITAL.

"The London Refraction Hospital," writes our correspondent, "has been re-built at a cost of £10,000, and wonderful new instruments have been installed. This battery of lenses will reveal if a patient's eye deviates ever so slightly from normal vision."



"WALKING ON THE WATER" WITH AN AQUATIC FORM OF SKI: AN AUSTRIAN SOLDIER ON THE DANUBE.

The title of this photograph, which comes from Vienna, is as follows: "The Austrian Army takes to water: a Danube river patrol equipped with ski for navigating at a foot pace on his rounds of duty." Apparently the ski are a type of float, and the double-bladed paddle is used both for propulsion and balancing.



THE "CLENCHED FIST" SALUTE OF THE GERMAN "REDS": TYPES OF UNOFFICIAL SOCIALIST FORCES AT STUTTGART.

"Although the Peace Treaty killed Germany's official army," says a note that accompanies these photographs, "there are unofficial armies parading in all the big German towns. The 'Yellows' are the Fascists of Germany, and there is a 'Red' Army which corresponds to our 'Red' organisations. These pictures show members of the rival 'armies' at a demonstration in Stuttgart." The distinctive methods of salute form an interesting contrast. The "Yellows" use the Fascist style of the raised right arm, while the clenched fist salute of the "Reds" indicates their feelings towards their "Yellow" rivals.



THE FASCIST SALUTE OF THE GERMAN "YELLOWS": RIVALS OF SOCIALIST "REDS."

"The 'Yellows' are the Fascists of Germany, and there is a 'Red' Army which corresponds to our 'Red' organisations. These pictures show members of the rival 'armies' at a demonstration in Stuttgart." The distinctive methods of salute form an interesting contrast. The "Yellows" use the Fascist style of the raised right arm, while the clenched fist salute of the "Reds" indicates their feelings towards their "Yellow" rivals.

The Navy's Part in Winning Canada: A French "Fireship" Attack.

FROM THE PAINTINGS BY SAMUEL SCOTT.



AN INCIDENT IN GENERAL WOLFE'S QUEBEC CAMPAIGN OF 1759: ENGLISH FRIGATES SAVED FROM FRENCH FIRESHIPS BY A "BARRAGE" OF OBSOLETE VESSELS, HERE SEEN SET IN FLAMES BY THE FRENCH.



NAVAL TACTICS IN THE EIGHTEENTH CENTURY: THE FRENCH DEFENDERS OF QUEBEC ATTEMPT A COUNTER-ATTACK BY FIRESHIPS ON THE ENGLISH FRIGATES ANCHORED IN THE ST. LAWRENCE.

The above coloured reproductions are particularly interesting in view of the recent movement to erect a memorial to General Wolfe at Greenwich, where he lies buried, to which a large number of Canadians have subscribed. The originals were painted in 1760, the year after the events depicted, for the Earl of Sandwich, then First Lord of the Admiralty. From his family they were purchased by Arthur Ackerman and Co., Ltd. by whose permission the above reproductions have been

made. They represent an incident in the 1759 campaign off Quebec, which culminated in Wolfe's celebrated storming of the Heights of Abraham, the taking of the city, and his own death. In the lower illustration the English frigates are seen caught at anchor in the St. Lawrence River by French fireships, and hastily making sail, while in the upper picture they are shown defending themselves by a line of obsolete ships from this early form of the floating mine.

The Largest Man-made Hole in the World: The Premier Diamond Mine, near Pretoria, South Africa.

FROM THE DRAWING BY BARRY PITTAR. (COPYRIGHTED.)



WHERE THE CULLINAN DIAMOND WAS FOUND: THE GREAT PREMIER MINE—A VIEW FROM THE LIP OF THE CRATER SHORTLY AFTER BLASTING OPERATIONS.

The Premier Diamond Mine, which is situated twenty-five miles east of Pretoria, in the Transvaal, is the largest open mine working in the world. It resembles a vast extinct crater, and some idea of its depth and extent may be gathered from the fact that ten million loads of ground removed from it in one year had the effect of lowering the surface by only 30 feet. The Premier Mine, which commenced operations in 1902, came into great prominence in 1905 on the discovery of the Cullinan Diamond, the largest white stone known, which weighed 3025 carats, equal to about 1½ lb. The diamond was presented to the late King Edward, and was subsequently cut into several portions, now incorporated in the British Crown Jewels. The above picture is an accurate impression by an eye-witness of the Premier Mine from the lip of the crater shortly after

the daily blasting operations, which provide a very impressive sight. The effects of the thunderous noises of charge upon charge of explosives echoing and re-echoing across the great void in the earth's surface are awe-inspiring. The fabulous wealth extracted from the soil of South Africa in the shape of diamonds is a romance closely bound up with the history and the development of this Dominion. The diamond mines of South Africa incidentally provide an absorbing interest of travel in this remarkable country, which is commanding such widespread attention at the present time. It will be helpful to our readers to know that information and advice regarding South African travel can be readily obtained from the Director of Publicity, South Africa House, Trafalgar Square, London, W.C.2.

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THE STATELY HOME OF "THE GREAT EIGHT": A NIGHT VIEW OF INVERESK HOUSE.

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DRAWN BY OUR ARTIST G. E. DAVE (COPYRIGHTED.)

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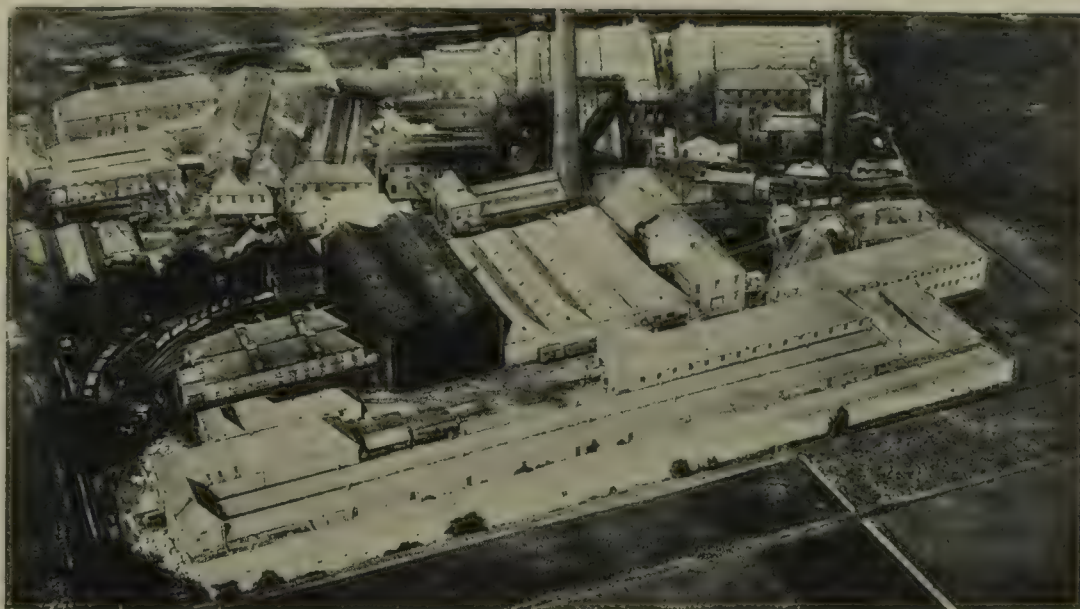
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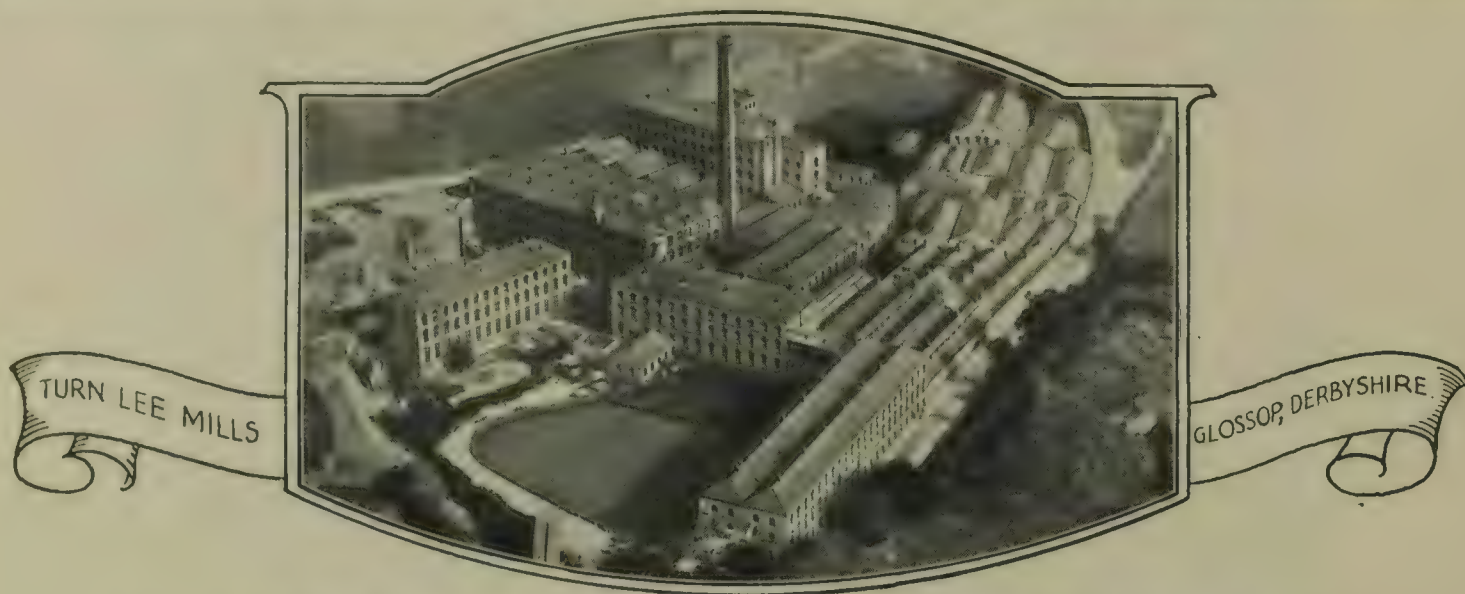
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 ROYAL MAIL STEAM PACKET Co., New West End Office, Cockspur Street.
 CANADIAN GOVERNMENT BUILDING, Canada House, Trafalgar Square.
 HUDSON'S BAY Co., New Offices & Fur Sales Rooms, Trinity Lane.
 IMPERIAL CONTINENTAL GAS ASSOC., Head Offices, Devonshire Square.
 CAFÉ ROYAL, Regent Street.
 WALPAMUR Co., Ltd., New Factories, Darwen.
 MARYLEBONE CRICKET CLUB, New Grand Stands at Lord's.
 CITY OF LONDON REAL PROPERTY Co., Ltd., New Office Building, Lime St.
 HONOURABLE SOCIETY OF GRAY'S INN, Additions to Library, Gray's Inn.
 CENTRAL LONDON THROAT, NOSE & EAR HOSPITAL, Gray's Inn Road, W.C., Extension to Hospital.
 BUENOS AIRES & G.T. SOUTHERN RY. Co., Ltd., New Office Building, South Place.
 HONG KONG & SHANGHAI HOTELS Co., Ltd., Peninsular Hotel, Hong Kong.
 PUBLIC WORKS DEPARTMENT, HONG KONG, New Fire Station & Municipal Offices, Hong Kong.
 PUBLIC WORKS DEPARTMENT, HONG KONG, New Reservoir, Hong Kong.

"The Great Eight" & Inveresk House.

TOWERING triumphant over the Strand with its heterogeneous conglomeration of

In the eighteenth century certain illustrated magazines were produced, but it was the revival of the art of wood engraving by Thomas Bewick which made illustrated journalism, as it is to-day, possible. It was the *Observer*, the first number of which appeared on Sunday, Dec. 4, 1791, which started regular illustrations, although many years had to go by before wood engraving was used as a means of popular illustration.

It is noteworthy that, as to-day the *Times* takes its place among the daily papers in which illustration plays a part, it was at the beginning of last century occasionally illustrated. In the number for Jan. 10, 1806, there is an account of Nelson's funeral, with an engraving of his coffin and funeral car (see page x1.). With a scrupulous regard for accuracy, the *Times* stated at the foot of the engraving: "The only difference in the appearance of the Funeral Car from the engraving is that, contrary to what was at

of the Victorian era they were the two great occasionally-illustrated journalistic rivals. In 1837 the country was stirred profoundly by an atrocious crime known as the Greenacre murder. It was elaborately illustrated in the *Weekly Chronicle*, and while the excitement lasted the paper had a sale of 130,000 copies weekly.

At that time there was in business in Nottingham a printer, bookseller, and newsagent named Herbert Ingram. He was so struck with the enormous demand for the *Weekly Chronicle* when it contained illustrations that it occurred to him that, if he could produce a paper in which pictures were regularly allied to news, it would probably secure a widely extended clientèle. He noticed also that his customers in Nottingham often asked for the "London news" when anything exceptional occurred in that city, and he therefore determined to include its name in the projected paper. He accordingly called it *The Illustrated London News*, and under that name the first number appeared on May 14, 1842.

It contained sixteen printed pages and thirty-two woodcuts, and it is emblematic of the care and thought which went to its making that its engraved heading is the same to-day as it was then a view of London from the Thames with St. Paul's in the centre, and the Lord Mayor's Procession in State barges passing up the river.

From the very outset the paper was a success, and by the time it was a year old it had reached a weekly circulation of 66,000. Sir John Gilbert, the famous artist, was conspicuous by his work in the first number, and it was significant of Mr. Ingram's policy to employ the best talent available and to pay for it handsomely. Later he was elected to Parliament by his native town, Boston, where, after his death by drowning in the United States, a statue to him was erected by public subscription, and it may not inaptly be regarded as the first memorial to illustrated journalism in this country.

Mr. Ingram was succeeded in the management of the paper by his two sons, the late Sir William Ingram and his brother, Mr. Charles Ingram, both of whom dedicated their lives to the service of *The Illustrated London News*, and incidentally to the improvement of illustrated journalism, for every advance made by their paper had necessarily to be followed by their then competitors. As "Amurath to Amurath succeeds," so Ingram, Ingram. To-day the destinies of *The Illustrated London News* are controlled by an Ingram of the present generation—Captain Bruce Ingram, O.B.E., M.C., the son of the late Sir William Ingram.

To-day, when every illustrated paper throughout the world and every magazine publishes a special number for Christmas, it is interesting to record that *The Illustrated London News* was the first paper to introduce this novel feature. The chief features of these special num-

bers, as everyone knows, are printed in colour. The initiative in this direction came from *The Illustrated London News*, which, in 1855, printed some of its Christmas number in colours. Naturally, these coloured pictures were imperfect, if not crude, compared with those of to-day, for they were practically little more than woodcuts with tints printed over them. It was not long, however, before much

[Continued overleaf]

The History of Illustrated Journalism.

When one remembers that more than one book has been written on

the origin and progress of the pictorial Press, it is obvious that, to quote the famous simile, one might as well endeavour to "accompany the Iliad on an oaten straw" as attempt to re-write that history within the compass of an article.

Briefly stated, illustrated journalism may be said to go back to the illustrated "broadsides" which related to particular events or satirised the follies and vices of the time. Among these early examples is one published in 1587 relating to Sir Francis Drake's operations, which he himself described as "singeing the King of Spain's beard," and which, by delaying the sailing of the Armada, gave England time to prepare for defence.

The *Weekly News*, which began in 1622, probably contained the first illustrations of current events, for in the number of Dec. 20, 1638, there is a statement that it contains a full-plate engraving that represented a "prodigious eruption of fire, which exhaled in the midst of the ocean sea, over against the Isle of Saint Michael, one of the Terceras, and the new island which it hath made."

On looking through the early newspapers it is apparent that the idea of illustrating the news of the day was never quite absent from the minds of the editors. Thus the *London Post* for July 25, 1701, contained a map of the seat of the war in Italy, which it reprinted in other numbers, and the *Daily Courant* for Sept. 8, 1709, contained a plan of Mons; while the *Dublin Journal*, on May 14, 1746, published a plan of the battle of Culloden, and in the following year it gave a plan of the trial of Lord Lovat. Engravings on copper were sometimes used by these early newspapers, as they had been for the broadsides of earlier times.

THE MOVING SPIRIT OF "THE GREAT EIGHT" AMALGAMATION: MR. WILLIAM HARRISON, LL.B., CHAIRMAN OF INVERESK PAPER COMPANY, LTD., AND ASSOCIATED COMPANIES, INCLUDING ILLUSTRATED NEWSPAPERS, LTD., AND "THE ILLUSTRATED LONDON NEWS" AND "SKETCH," LTD.

Mr. William Harrison, to whose organising genius is due the assemblage of "the Great Eight" at Inveresk House, became a leading figure in the newspaper world in 1926, when, as Chairman of the Inveresk Paper Company, Ltd., he purchased from Sir John Ellerman the control of a group including "The Illustrated London News," "Sketch," "Sphere," "Tatler," and "Eve." To these have since been added the "Graphic" and "Bystander." In 1927 he acquired the "Lancashire Daily Post" and, last July, the "Daily Chronicle," the "Sunday News," and three provincial papers. Mr. Harrison, who is under forty-five, was born in Yorkshire. He was educated at Giggleswick Grammar School and Leeds University, where he took his LL.B. In 1910 he was articled to a solicitor in Bradford; then, coming to London, he was admitted a solicitor, and became a partner in the firm of Harrison, Fielder and Co. Under his direction the Inveresk Paper Company, Ltd. has acquired numerous pulp and paper mills in Scotland, England, and Germany, and has large interests in North Africa.

From the Portrait by Sir Frank Dicksee, P.R.A., Presented to Mr. Harrison by the Directors of Inveresk and Associated Companies.

first intended, neither the pall nor coronet appeared on the coffin. The first was thrown in the stern of the Car, in order to give the public a complete view of the coffin; and the coronet was carried in a mourning-coach. We had not time to make the alteration."

Soon after the *Observer* was started, the *Weekly Chronicle* came into existence, and at the beginning



better things were achieved, and the coloured Christmas pictures, like those of "Little Red Riding Hood," after the late James Sant, R.A., published as long ago as 1863, and "Bubbles," by Sir John Millais, for which a sum as high as three thousand pounds was paid, were exceedingly popular.

Even in those early days, the magnitude of the operations in connection with illustrated journalism was such that when King Edward, as Prince of Wales, was married in March 1863, *The Illustrated London News* printed 930,000 sheets of the issue for that single week alone. These sheets, set side by side, would cover 660 miles, and, as they were printed on both sides, they would make a printed surface of more than 1115 miles in length, after deductions for margins.

Nearly 80 tons of paper and 23 cwt. of printing ink were used for the production of that number. Striking as are these figures, they fade into insignificance when compared with the combined needs of "the Great Eight," to which reference is made in another page.

No sooner had *The Illustrated London News* proved that it supplied what is euphoniously called "a long-felt want," than its success brought imitators into the field. The first of these was the *Pictorial Times*; but, though the *Pictorial Times* lasted several years, it never achieved such a success as to be a serious rival to its brilliant competitor.

Other competing papers were *Pen and Pencil*, the *Illustrated Times*, the *Illustrated News of the World*, and the *Ladies' Newspaper*, which, as its title proclaims, made a special appeal to women, but was finally absorbed by the *Queen*. In the provinces, the *Illustrated Midland News* appeared in Manchester, but that city, with its neighbourhood, was not ready to support such an undertaking, and it ceased after a short time. It was succeeded by the *Illustrated London and Provincial News*, which again had only a short career. It was about this time that the *Graphic* came into existence, and was followed by the *Pictorial World*, the *Illustrated Sporting and Dramatic News*, and the *Lady's Pictorial*.

We may conclude this account of the origin of illustration in newspapers by quoting the words of Mr. Mason Jackson, the author of the standard work dealing with the History of Illustrated Journalism. Writing in *The Illustrated London News* in 1879, he stated: "The *Illustrated London News* is now the parent of a very numerous progeny, having been imitated in nearly every



THE FIRST GENERATION: THE LATE MR. HERBERT INGRAM, M.P., FOUNDER OF THE FIRST ILLUSTRATED WEEKLY NEWSPAPER, "THE ILLUSTRATED LONDON NEWS."

Herbert Ingram was born at Boston, Lincolnshire, on May 27, 1811. He founded "The Illustrated London News," the first illustrated weekly, in 1842.



THE SECOND GENERATION: THE LATE SIR WILLIAM JAMES INGRAM, FIRST BARONET, SON OF THE FOUNDER OF "THE ILLUSTRATED LONDON NEWS," AND FOR MANY YEARS CHIEF DIRECTOR OF "THE ILLUSTRATED LONDON NEWS" AND THE "SKETCH."

Sir William Ingram was born on October 27, 1847, and died on December 18, 1924. For many years he was the chief proprietor of this paper, as well as of the "Sketch" and of the "Illustrated Sporting and Dramatic News." Like his father, he was M.P. for Boston. In 1874 he married Miss Mary Stirling, daughter of the Hon. Edward Stirling, of Adelaide. In 1893 he was made a Baronet.



THE THIRD GENERATION: CAPTAIN BRUCE S. INGRAM, O.B.E., M.C., THE PRESENT EDITOR OF "THE ILLUSTRATED LONDON NEWS" AND THE "SKETCH."

Captain Bruce Ingram, who is the second son of the late Sir William Ingram and a grandson of the founder of this paper, has been its Editor since 1900, and Editor of the "Sketch" since 1905. He was born in 1877, and was educated at Winchester and Trinity, Oxford.



THE SECOND GENERATION: MR. CHARLES L. N. INGRAM, SON OF THE FOUNDER OF THIS PAPER, AND FORMERLY CHAIRMAN OF "THE ILLUSTRATED LONDON NEWS" AND "THE SKETCH," LTD.

Mr. Charles Ingram, who is a son of the late Mr. Herbert Ingram, and brother of the late Sir William Ingram, Bt., was for many years associated with the latter as co-Manager in the direction of this paper, and on Sir William's retirement, became Managing Director of "The Illustrated London News" and "The Sketch," Ltd. He continued to hold this post until the controlling interest in these papers passed to other hands a few years ago.

The native boatmen on the Chinese rivers are very fond of decorating their cabins with cuttings from the pictorial journals; and even in the huts of Modoc Indians copies of *The Illustrated London News* have been found."

Written nearly fifty years ago, these words apply equally well to the present day. In the Amazon forests, in Darkest Africa, in the wastes of the Polar regions, and in the Asian deserts, pictures from the pages of the premier illustrated journal may be found as treasured possessions. Mr. Mason Jackson summed up his treatise with the following words: "The reader . . . will have seen that the illustrated newspaper began as a small and dingy sheet, slowly and laboriously printed at a rude hand press. He will have traced it from the early news-book, through its various phases of existence, until he beholds it issuing from the steam press almost as rapidly as water flows from a fountain. Instead of the dirty scrap of rough paper, we see a spotless web three miles long rapidly unrolling from a great cylinder."



KEEPING "THAT PART OF THE STRAND IN A TUMULT" WITH A DOUBLE NUMBER ON THE GREAT EXHIBITION: THE PUBLISHING OFFICES OF THIS PAPER, AT THE CORNER OF MILFORD LANE, IN 1851.

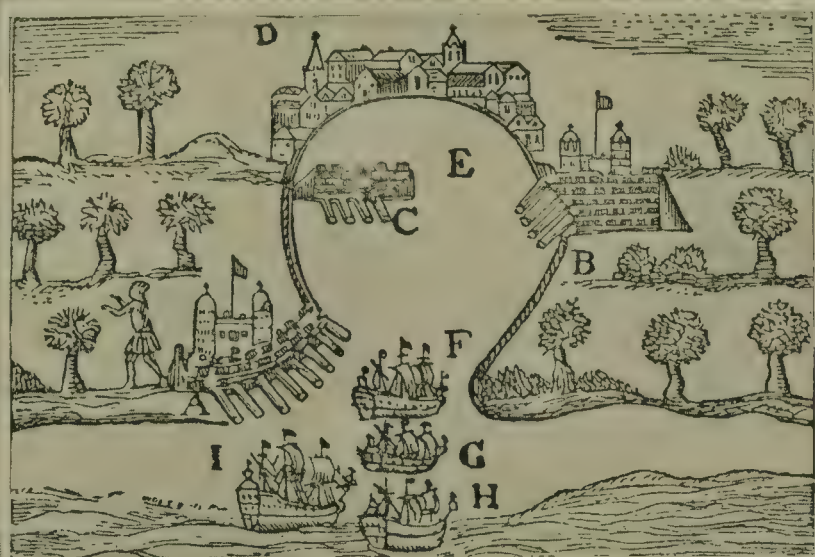
This interesting old drawing, from our issue of May 24, 1851, was accompanied by a descriptive note by a contemporary, wherein we read: "This is the publishing office of 'The Illustrated London News,' which . . . keeps for half the week that part of the Strand in a tumult, while the operation of distributing the papers is going on."

PRECURSORS OF ILLUSTRATED PAPERS:

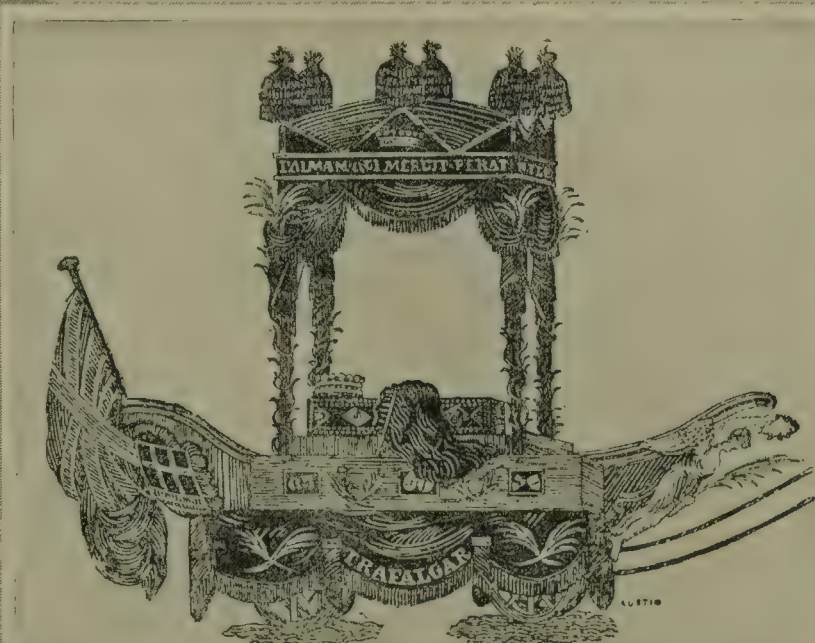
OLD WOODCUTS FROM TRACTS, "BROADSIDES" AND PERIODICALS.



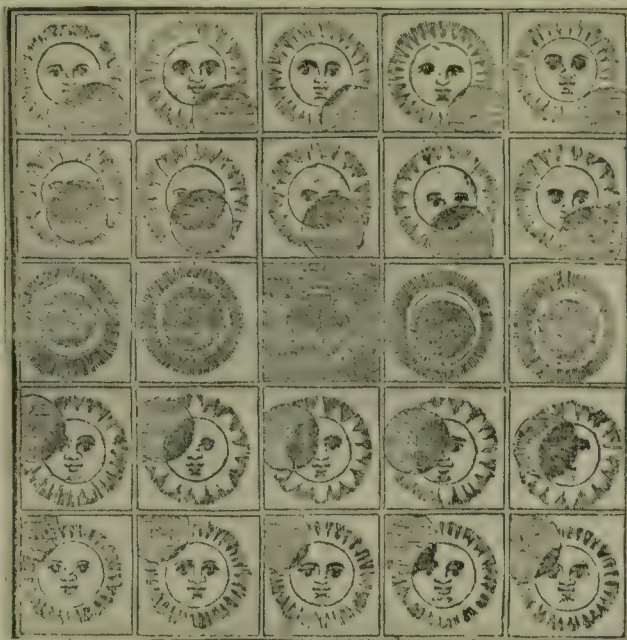
1. THE EARLIEST ILLUSTRATION OF CURRENT NEWS: "GREAT FLOOD IN MONMOUTHSHIRE, 1607"—A WOODCUT FROM A CONTEMPORARY PAMPHLET.



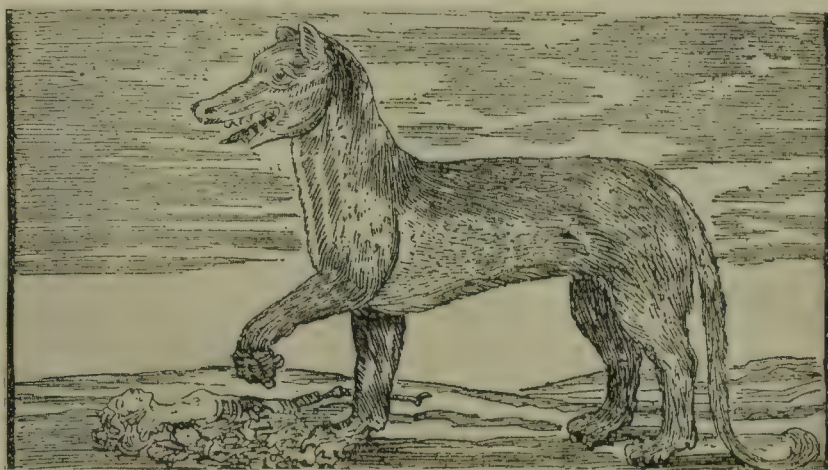
3. "ADMIRAL VERNON'S ATTACK ON PORTO BELLO": AN EARLY EXAMPLE OF WAR ILLUSTRATION FROM THE "DAILY POST," 1740.



5. "NELSON'S FUNERAL CAR": AN ILLUSTRATION FROM THE "TIMES" OF JANUARY 10, 1806.



2. "ECLIPSE OF THE SUN": A WOODCUT FROM "PARKER'S LONDON NEWS" ILLUSTRATING THE EVENT (MAY 11, 1724).



4. "STRANGE WILD BEAST SEEN IN FRANCE": A CURIOUS WOODCUT FROM THE "ST. JAMES'S CHRONICLE" IN 1765.

6. "THE CORONATION OF QUEEN VICTORIA": A WOODCUT FROM THE "OBSERVER" OF JULY 2, 1838.



During the year 1879 "The Illustrated London News" published serially a very interesting work called "Illustrated News: a Sketch of the Rise and Progress of Pictorial Journalism," from which we here reproduce some of the quaintest examples. Regarding No. 1 above, the writer says: "In the reign of James I., papers of news began to be published. . . . The 'Weekly News' (about 1622) . . . was the first periodical newspaper published in England. But long before this many illustrated tracts and pamphlets were published relating to events of recent occurrence. In one dated 1607 occurs the earliest instance I have met with of an attempt to

illustrate the news of the day. It is entitled 'Wofull Newes from Wales, or the lamentable loss of divers Villages and Parishes (by a strange and wonderful Floud) within the Countye of Monmouth in Wales: Which happened in January last past, 1607, whereby a great number of his Majesties subjects inhabiting in these parts are utterly undone.' It is printed in Old English." Describing the woodcut in No. 4, the writer says: "In the winter of 1764-5 a strange wild beast was said to have appeared in France, devouring women and children, and spreading dismay and terror through the whole of Languedoc."

"The Illustrated London News."

Although the title of *The Illustrated London News* indicates the limitations which its creator, Mr. Herbert Ingram, thought would suffice for its scope, he found that, from the practical point of

chronicled pictorially in the pages of the paper, which from being a luxury has grown to be a necessity not merely throughout the United Kingdom, but throughout the world; for it is not merely an informative but also an educative force of primary importance.

The reason for this is that *The Illustrated London News* has moved with the times. As the development of electrical communication has annihilated time and space, so the most remote parts of the world have been brought near to London, and events thousands of miles away have become part of London's news, and in so far as they can be rendered pictorially they fall logically within the scope and title of *The Illustrated London News*.

Were a list to be made of the writers who have contributed to the paper, it would include most of the eminent men and women, in exactly the same way as it would include the most eminent artists, of the last eighty-six years. Every movement of educated mankind in politics, sociology, art, science, archaeology, music, literature, sport, the drama, travel, and exploration receives attention.

In no field of science has *The Illustrated London News* been more conspicuous than in that of archaeology. The recent discoveries in Egypt may be cited as an example of its method of treating such subjects, which has been as comprehensive and illuminating on the artistic as on the literary side. This archaeological work has given the paper a reputation which is not approached by any other publication in the world.

In nothing is the progress of *The Illustrated London News* more marked than in the coloured pictures which appear with such frequency. Not less noteworthy than the change which has been brought about by the substitution of what is known as "process" for the wood engraving which was the only means of illustration in the paper's early days, is the change from the early coloured woodcuts to the perfection which can be obtained by modern colour printing.

"The Graphic." As out of death life often comes, so out of the death of George Housman Thomas came the birth of the *Graphic*. That death led his brother, William Lusson Thomas, to secede from *The Illustrated London News* and found the *Graphic*, which gave a new noun to the language, for until that time the word had been an adjective. W. L. Thomas was a great engraver in wood, and he possessed a remarkable knowledge of how an engraving should be reproduced, and it was he who introduced the method of photographing the original drawing direct on to the wooden block, thus paving the way for what is known as "process work," a term which will be explained on a later page. It was this which revolutionised the art of illustration.

Nurtured in the office of *The Illustrated London News* (for he was in his fortieth year when he seceded), Mr. Thomas brought to his new venture an assured conviction that nothing less than the best would satisfy the exigent public to which he made his appeal. For this reason the best writers and the best artists were drawn into the *Graphic's* service.

Just as Sir John Gilbert, one of the greatest illustrative artists of his day, contributed to the early numbers of *The Illustrated London News*, so such famous men as Sir Luke Fildes, Millais, and Walker were among regular contributors to the *Graphic*; while Anthony Trollope, Wilkie Collins, Charles Reade, W. S. Gilbert, and Thomas Hardy were among those who supplied it with fiction. The *Graphic*, therefore, from the very first, took its place in the hierarchy of journalism, and from that place it has never descended.

"The Illustrated Sporting and Dramatic News."

The first of the illustrated papers founded to deal with sport and the drama made its appearance early in 1874. At that time the spirit of the nation, always attuned to sport of all kinds, was reaching out with a greater enthusiasm towards the life of the open air which is so marked a characteristic of our own time. The drama, too, which had been languishing for lack alike of great acting and fine plays, was showing renewed symptoms of life under the influence of the Bancrofts, the Kendals, and the increasing popularity of Henry Irving, who was soon after to form his great alliance with Ellen Terry, which made the Lyceum not merely a theatre, but a temple of dramatic art.

The moment was ripe for the establishment of a journal devoted to those two interests, which should also deal comprehensively with cricket, football, lawn-tennis, racing, polo, and shooting, as well as with indoor games like billiards—in short, with sport and recreation of all kinds. The appeal of the journal did not disappoint its optimistic creators, and during the fifty years and more of its existence the standard it set for itself has been maintained, with the result that the *Sporting and*

Dramatic has an unrivalled standing as a country gentleman's illustrated newspaper.

"The Sketch." As the hour produces the man, so it may be said to produce the paper. With the dawn of the last decade of the nineteenth century the shrewd rulers of *The Illustrated London News*, watching the trend of London society, could not fail to observe the growing



THE OPENING PAGE OF THE FIRST NUMBER OF "THE ILLUSTRATED LONDON NEWS," DATED MAY 14, 1842: A FACSIMILE REPRODUCTION.

The illustration is entitled "View of the Conflagration of the City of Hamburg." A portrait of the Editor, Capt. Bruce Ingram, O.B.E., M.C., appears on page x.

view, there could be no such circumscribed policy as would limit it to the doings of the Metropolis. In the very first number there appeared a vigorous engraving of the burning of Hamburg. Since then,



THE FIRST NUMBER OF "THE GRAPHIC" DATED DECEMBER 4, 1869; AND ITS PRESENT EDITOR, MR. ALAN BOTT.

there is no important event in the world's history during the last eighty-odd years which will not be found



THE FIRST NUMBER OF "THE ILLUSTRATED SPORTING AND DRAMATIC NEWS," DATED FEBRUARY 28, 1874; AND ITS PRESENT EDITOR, MR. W. J. MOORE.

interest in the lighter side of life, coupled with a personal interest in the theatre and those who live by it. Acting on this observation, it was decided to start a new paper whose motto was "Art and Actuality."



The Sketch

No. 1. WEDNESDAY FEB. 1, 1893.

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THE FIRST NUMBER OF "THE SKETCH," DATED FEB. 1, 1893. A portrait of the Editor, Capt. Bruce Ingram, O.B.E., M.C., appears on page x.

As a sketch gives a sharp, swift impression of a given scene or object, the word seemed peculiarly appropriate for such a publication, which aimed at first to be merely light and amusing. The outcome was

Acquiring Material. Few people turning over the pages of *The Illustrated London News*, or any of its colleagues in "the Great Eight," can form an adequate idea of the labour involved in the production of a single number.



VERY REMARKABLE ACHIEVEMENTS OF PRESS PHOTOGRAPHY: THE OUTRAGE THAT PRECIPITATED THE WORLD WAR—GAVRILLO PRINZIP UNDER ARREST AFTER HAVING SHOT THE ARCHDUKE FRANZ FERDINAND AND HIS WIFE AT SERAJEVO.

Gavrilo Prinzip, who shot and killed the Archduke Franz Ferdinand and his wife at Serajevo, on June 28, 1914, thereby precipitating the Great War, was described at the time as a Bosniak high school student, aged nineteen, who had been expelled from Bosnia for having taken part in a pro-Serb demonstration. It was said that, before firing the fatal revolver shots, he had thrown a bomb at the royal carriage, but it did not explode. Had it not been for the intervention of the police, he would have been lynched by the crowd.

As everyone knows, it is the Editor on whom, from first to last, the responsibility rests, not only for the material which appears in the paper, but for the way in which that material is arranged on each page. It is he who decides on the reading matter, and therefore the writers who are engaged to produce it, as it is he who selects the artists or the photographs by whose means the articles are illustrated; and it is he who decides exactly what form those illustrations must take. In association with his staff he selects the photographs, which are submitted to him by the photographers themselves or by the agents of those who gather material in every part of the world.

Among the photographic agencies of London from whom a not inconsiderable part of the illustrations which appear in the "Great Eight" are drawn are the Topical Press, the Central News, and the Central Press, whose organisations are controlled by a refinement of system which enables them to transform into order what, without system, would be chaos, and to change indiscriminate "rush" into finely organised rapidity.

In photography to-day, as in news-gathering, rapidity is of the utmost importance, for the agency which gets its photographs to the editor with the least loss of time is, other things being equal, the most likely to effect a sale; and, though one sale may not make much difference, so many daily papers throughout the country now introduce pictures into their make-up that rapidity is a more vital force than it ever was.

Many of the events to be photographed are, naturally, known days beforehand, for all the great news agencies are supplied with a list of coming events; and, in addition, news of unexpected happenings is furnished all through the day by the tape machines. If an operator has been out taking photographs of one of these prearranged events, or if he is rushed out to the scene of some accident, the moment his camera is clicked on the last picture he returns with all speed to his office and hurries to the developing-room, where he develops his plates as rapidly as possible. No sooner are they washed and ready than they are passed to the printing-room.

While the plates are being printed, the photographer goes to the journalists who form

an important element in the Press photographic agency, tells them the story of the pictures he has just developed, and they typewrite all the essential particulars, ready to be gummed on the back of the photographs. Prints from the negatives are hurriedly dried in a gas oven large enough to hold dozens at a time, stamped with the name of the firm, the captions are gummed on, and they are then distributed by messengers to the various newspapers.

When the required number of prints for the London papers has been arranged for, the country and the foreign newspapers are next attended to. This involves every known method of transport—post,

trains, motor-cars, motor-cycles, and aeroplanes. As foreign countries also come within the scope of the photographic agencies, the great Transatlantic steamers play their part as messengers in the distribution of photographs.

Photographs of past events are frequently needed at short notice by the illustrated papers. This involves the keeping of an ever-increasing number of negatives and photographic prints which have to be carefully filed for use at a moment's notice. When it is stated that the Topical Press, for instance, has in its files something like half-a-million negatives, and two million prints in its library, and at a moment's notice a negative of any well-known man or woman or event, which has been taken by its photographers at any time during the last quarter of a century, may be supplied, some idea may be formed of the need of a perfect filing system.

When the illustrations are being selected by the Editor, they have then to be considered

from the point of view of general interest, the space they shall occupy, and the place they are to fill. This generally involves reducing or enlarging the picture so that it will fit the chosen space. The labour the mere selection of photographs involves may be judged when it is stated that the Editor of *The Illustrated London News* alone sees something like six thousand subjects every week. Since only a fraction of these pictures can be utilised, the rapid judgment which is passed on them must be done with unerring accuracy.

Material is acquired in two ways: it may begin as an article which has to be illustrated, or it may begin as a picture or photograph which has to be explained or written up. If the former, the illustrations may have to be obtained from various sources. This will involve the writing of letters, the sending of telegrams, telephoning, or the sending of a representative to interview persons concerned with the matter



VERY REMARKABLE ACHIEVEMENTS OF PRESS PHOTOGRAPHY: THE SCENE OF THE "BATTLE OF SIDNEY STREET" IN 1911—THE BURNING HOUSE AFTER THE CRIMINALS WITHIN HAD BEEN BESIEGED FOR SEVERAL HOURS.

The "battle of Sidney Street," which was directed by Mr. Winston Churchill (then Home Secretary), lasted for seven hours on January 3, 1911. Certain criminals wanted for burglary and the murder of three City policemen were traced to No. 100, Sidney Street, Mile End Road. On approaching the house the police were met by a fusillade of bullets from the windows. Eventually troops and artillery were brought into action, the house took fire, and two bodies were found in the ruins.

in hand. In many cases photographers are engaged in order to secure illustrations for special subjects which the Editor desires to introduce; while in other cases artists are employed to make elaborate sketches of subjects with which the camera is unable to deal.

The Making of Engravings. In the old days when

The Illustrated London News was first produced, and for the next forty years, it depended for its illustrations on wood-engraving. For this purpose boxwood was used, on account of its close grain, its hardness, and its light colour, which permitted finer and sharper lines being cut upon it than on any other wood.

To prepare this boxwood for the engraver, transverse slices about an inch long were cut from the logs and seasoned. These blocks were then cut into small pieces, which were fitted together by brass bolts and nuts, so that a large block of any size could be made. The advantage of this method was that the bolts could be removed and the pieces distributed to different engravers after the drawing had been made on it.



VERY REMARKABLE ACHIEVEMENTS OF PRESS PHOTOGRAPHY: THE HISTORIC BOMB OUTRAGE ON THE KING AND QUEEN OF SPAIN DURING THEIR WEDDING PROCESSION ON MAY 31, 1906—PERHAPS THE MOST DRAMATIC PHOTOGRAPH EVER TAKEN.

This unique photograph was taken in Madrid at the actual moment of the explosion of a bomb thrown from a balcony by an Anarchist at the carriage in which the King and Queen of Spain were returning in procession from their wedding. Nearly twenty people were killed. The photograph appeared exclusively in "The Illustrated London News."

FROM PRESS PHOTOGRAPH TO PRINTING BLOCK IN FORTY-FIVE MINUTES.



3 P.M. THE PRESS PHOTOGRAPHER RETURNS WITH PLATES EXPOSED AT A NOTABLE EVENT.



3.7 P.M. THE DEVELOPING AND PRINTING SECTION AT THE TOPICAL PRESS AGENCY, SHOWING FINISHED PRINTS BEING DROPPED DOWN A CHUTE TO THE "CAPTIONING" DEPARTMENT.



3.8 P.M. PRINTS NOW SORTED, "CAPTIONED," AND STAMPED WITH THE AGENCY'S NAMES.



3.13 P.M. MESSENGERS COLLECTING THE PRINTS, WHICH ARE THEN "RUSHED" TO THE NEWSPAPERS.



3.20 P.M. A PHOTOGRAPH BEING COPIED FOR REPRODUCTION BY THE HALF-TONE PROCESS.



3.28 P.M. "PRINTING" THE COPY NEGATIVE ON TO METAL.



3.36 P.M. ETCHING THE HALF-TONE PLATE, WHICH NOW BEARS A "DOTTED" REPLICA OF THE ORIGINAL PHOTOGRAPH.



3.41 P.M. BEVELLING, AND MOUNTING THE METAL PLATE TO A WOOD BASE.



3.45 P.M. PROOFS ARE TAKEN OF THE FINISHED BLOCK, WHICH IS THEN READY FOR THE PRINTER.

The photographs illustrated above give a "peep behind the scenes" of a few of the interesting operations which are necessary for the making of pictures for inclusion in an illustrated weekly newspaper. In the early days, when illustrations were printed from hand-cut wood blocks, several days would usually elapse between the completion of the artist's drawing and the finishing of the wood engraving. To-day, however, a photograph of a topical event may be taken at 2.45 p.m., and sixty minutes later a block is ready and replicas of the photograph are being turned out by the newspaper machines. In the case of a daily newspaper, it is possible to reproduce a photograph by the half-tone process in about twenty

minutes; but for high-quality printing on art paper a process block may be completed in a minimum of about thirty minutes. Many amateur photographers, who send their films to be "developed and printed in 24 hours," may be interested to know that the Press photographers of Fleet Street think nothing of issuing a print ready for reproduction only twelve minutes after the photographer returns from an event. The time taken for the respective operations are: developing, fixing, and washing the exposed plate, four minutes; exposing, developing, fixing, washing, drying and captioning the print, three minutes; transit to a newspaper office, five minutes.

(Continued)

The next step in advance was devised by Mr. Thomas, the founder of the *Graphic*, who conceived the idea of superseding the draughtsman by photographing the illustration direct on to the boxwood block. This, in time, led to the direct substitution of a zinc or copper block, on which the subjects to be reproduced were photographed. In this way was developed what is called "process."

The introduction of the making of illustration blocks in this way brought a new business into being. Notable among the firms which first came into existence are Lascelles and Co., Ltd., and the Nickeloid Electrotype Co., Ltd., on both of whom the members of "the Great Eight" rely for the beautiful productions of their illustrated pages.



ONE OF THE "EYES" OF A PORTRAIT MUCH ENLARGED TO SHOW HOW THE PHOTOGRAPH IS "BROKEN-UP" BY THE HALF-TONE PROCESS INTO "DOTS" OF VARIOUS SIZES RELATIVE TO TONE VALUES.

The story of the reproduction of a photograph in a paper is an interesting one, and may be readily told without the use of technical expressions.

The conspicuous objects in the block-maker's studio are the cameras. Each is mounted on a special frame, together with the copying-board on which the subject is pinned. The image of the subject which is being copied reaches the sensitive photographic plate through a finely ruled glass screen which produces on the negative a series of dots, as can be readily observed in the illustration on this page. The screens made in this way vary from 55 to 200 lines or more to the square inch; and it need hardly be said that the finer the screen the more numerous are the dots, and the better the paper that must be used. Most of the illustrations printed in the papers of "the Great Eight" have 133 dots to the square inch, and need a magnifying glass in order to be seen.

The glass negative is then placed in a frame in close contact with a highly polished copper plate previously sensitised to light by a coating of bichromated fish-glue. Next, it is placed in front of a powerful electric light, which shines through the transparent dots of the negative. The parts of the sensitised fish-glue on the plate become insoluble owing to the influence of the electric light. Those parts not affected by light are washed out in water, thus leaving only the image (in fish-glue) which is then "baked-in" by intense heat in order further to reinforce it against the action of the etching solution.

After etching, the picture is presented in a series of "dots" which stand up in relief and form the printing surface of the plate, which, after being mounted on wood, and proofed, is ready for the press.

Photogravure.

The restless desire for the attaining of better results which

is the distinctive characteristic of those engaged in the so-called mechanical arts led to innumerable experiments which, in time, brought about the introduction of that beautiful process known as "photogravure," which is the reverse of block-printing.

In the latter, the printed surface of the half-tone block is raised; in photogravure, the printed surface is etched in intaglio. This intaglio-printed surface, when looked at through a powerful magnifying lens, is seen to consist, not of a series of raised dots, as in a half-tone block, but a series of minute rectangular cells. Closer examination shows that these cells vary considerably in their depth. Those which give the high lights in the finished print are very shallow; and as the shadows increase in intensity, the cells increase in depth.

The perfection attained by photogravure did not, however, satisfy the requirements for speedy work. As the result of much experimenting, the

photograph was applied, not to a flat surface, but to a cylinder, which could be made to revolve or rotate. This rotary method of photogravure is known as "Rotogravure."

Though photogravure for a long time was employed only for expensive supplements and "loose" plates, Captain Bruce Ingram, the Editor of *The Illustrated London News*, had for a long time realised its possible use for the publication of illustrations of current news. After many years of experiment, this process was brought to a stage where such use of the Rotogravure process became practicable, with the result that two of the leading papers of "the Great Eight," namely, *The Illustrated London News* and the *Sketch*, are now almost entirely printed by this method, which, it is claimed, gives greater depth and contrast than the ordinary half-tone process.

Autotype.

Notable among the manufacturers of photographic paper is the Autotype Company, which, having been founded sixty-odd years ago, is one of the oldest in the kingdom engaged in this business; as well as in photographic enlarging and printing. One of the principal branches of the company's activities is the making of tissues which are used in the rotary-photogravure process, by which, as has already been stated, *The Illustrated London News* and the *Sketch* are printed.

From the days of its institution the Autotype Company specialised in securing permanency for photographic products. This is achieved by their Autotype Carbon and "Carbro" printing methods, which combine absolute permanency with a wide selection of artistic colours, which are of supreme value to the amateur as well as to the professional photographer. Thus, waves breaking on the sea-shore can be printed in "sea-green," woodland views in a delicate "grey-green," moonlight effects in dark blue, and sunset and seashore effects in terracotta, etc. The advantage of the permanent autotype print is that it is exceedingly simple, for its development is effected with warm water, no chemical solutions being required.

Colour.

The coloured pictures which are such attractive adjuncts to *The Illustrated London News* and associated journals of "the Great Eight" are now a regular feature. The process which enables these pictures to be made with such completeness and effect depends on the theories of J. Clerk-Maxwell, who, in 1861, in a lecture delivered at the Royal Institution, suggested the theory of the three-colour process.

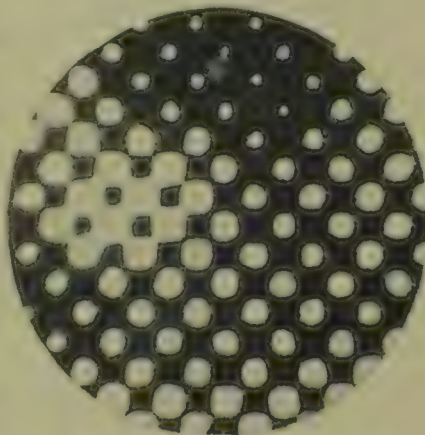
Long before his time, however—almost as soon as photography was invented—men dreamed of finding some means for the reproduction of photographs in their natural colours, and all sorts of experiments were undertaken to find a means of recording permanently the colours seen on the focussing glass of the camera. Indeed, Dr. Thomas Young, in 1802, advanced the theory that there were only three

in which three photographs of a coloured ribbon, taken through three coloured solutions, were placed in a lantern, giving the images of the red, green, and blue parts separately. When these were superimposed, a coloured image was obtained which, had the red and green images been as fully photographed as the blue, would have presented a truly coloured picture of the ribbon. The difficulty in doing this was that the photographic plates of Maxwell's time were not sensitive to green and red. Later, however, means were discovered for producing such colour-sensitive plates, and they were employed in the way Maxwell suggested.

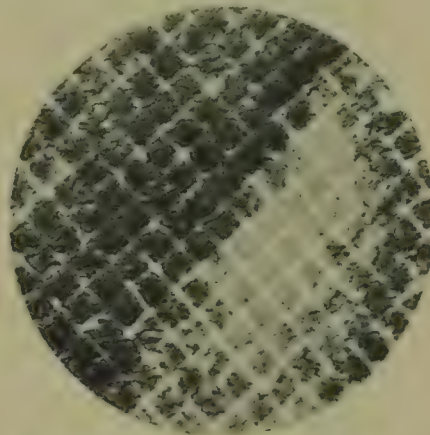
The first suggestion for the application of Maxwell's idea to colour-printing was made in 1865 by a nobleman in Vienna, and Mr. Henry Collen, Queen Victoria's drawing-master. Their idea was to make negatives from a coloured subject through red, yellow, and blue mediums respectively, these colours being the primary ones of the spectrum, by whose mixture all the other colours can be obtained. Collen proposed that these three negatives should be printed in red, yellow, and blue ink superimposed on the paper.

It would be a work of supererogation to treat in this place of the many experimenters who have worked to bring the three-colour process to the perfection to which it has arrived. A whole volume would, indeed, be needed for the purpose. Briefly, it may be said that the photographing of colour has been made possible by the discovery of a dry plate which, as it is sensitive to all colours, is known as a "panchromatic plate."

In pursuing the problem which evolved the three



A HIGHLY MAGNIFIED PORTION OF AN ILLUSTRATION REPRODUCED BY THE HALF-TONE PROCESS, SHOWING HOW THE INK IS DEPOSITED ON THE PAPER BY THE "RAISED" SURFACE OF THE METAL PLATE.



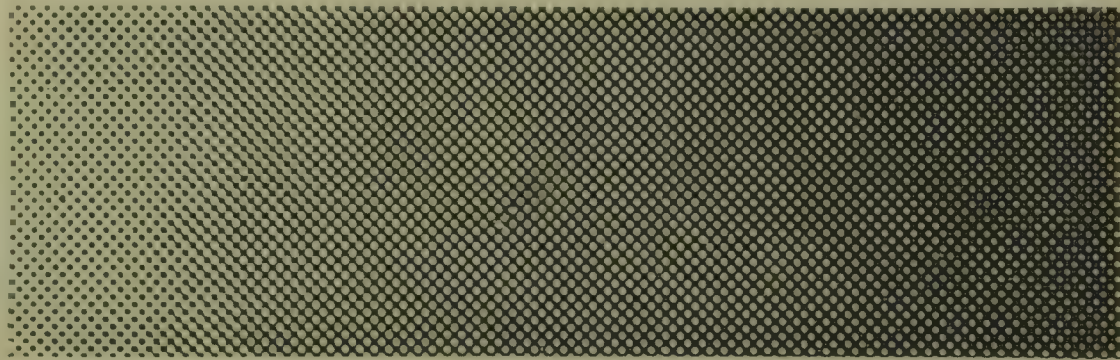
A HIGHLY MAGNIFIED PORTION OF AN ILLUSTRATION REPRODUCED BY THE ROTARY-GRVURE PROCESS, SHOWING HOW THE PAPER HAS PICKED UP THE INK FROM THE INTAGLIO RECESSES OF THE COPPER CYLINDER.

colour process the question arose as to what gives the colours of different objects. Why, for instance, is grass green?—why are flowers red, blue, yellow, and so on. The reason is that when white light falls upon such objects they absorb part of the colours of which white light is formed, and reflect the remaining colours of the spectrum. This mixed reflection gives the distinctive colour of the object. To reply to the first question asked, the grass is green because it absorbs all the violet of the spectrum, all the red, a considerable quantity of the blue, and most of the yellow. It therefore reflects only a little blue and yellow. These colours mixed together will give green,

the characteristic colour of grass. Similarly with other objects. Technically, this is known as selective absorption.

The making of half-tone blocks for three-colour printing is similar to that of the making of ordinary blocks, which has been already described. The difference is that the three negatives are taken on panchromatic dry plates with a coloured filter placed between the lens and the colour-sensitive dry plate.

An example of this will best illustrate the description. Suppose, for instance, a water-colour drawing of a red-roofed house with a lawn and a yellow rose tree against a blue sky is to be reproduced. The first process is to take a half-tone negative through a blue filter. This gives a record of all the blue light reflected from the drawing. The colour-filter allows only blue light to pass, and the negative will give the yellow rose as clear glass, and the blue sky will be opaque. The block made from the negative taken through the blue filter is printed in yellow ink. The



SHOWING HOW THE GRADATIONS OF TONES FROM LIGHT TO DARK ARE PRODUCED BY THE HALF-TONE PROCESS: THE HIGH LIGHTS OF A PHOTOGRAPH REPRODUCED BY THIS PROCESS WOULD BE REPRESENTED BY THE SMALL DOTS SEEN ON THE LEFT, AND THE SHADOWS BY THE DARKER MASSES SHOWN EXTENDING TO THE RIGHT, OF THE ILLUSTRATION ABOVE.

fundamental colour sensations. This theory was, however, discredited, and forgotten for half a century, when Professor Helmholtz again advanced it, strengthened by the experiments he had made. Clerk-Maxwell, in his lecture, showed that all the colours in the spectrum, and therefore in Nature, could be imitated by a mixture of three only. He thus proved the correctness of Young's theory. Among the experiments with which he illustrated his lecture was one

drawing of a red-roofed house with a lawn and a yellow rose tree against a blue sky is to be reproduced. The first process is to take a half-tone negative through a blue filter. This gives a record of all the blue light reflected from the drawing. The colour-filter allows only blue light to pass, and the negative will give the yellow rose as clear glass, and the blue sky will be opaque. The block made from the negative taken through the blue filter is printed in yellow ink. The

second negative is taken through a green filter. In this only the green light will pass through the filter, and the red tiles will therefore appear on the negative as clear glass, while the grass will be opaque. The

The Monotype machine closely resembles a typewriter, and is worked in much the same way. The operator at the keyboard is given a piece of "copy" and told the size of type in which it is to be printed, and the width it is to occupy on the page. He adjusts the gauge and proceeds to tap the keys as a typist would. This action causes two punches to rise and force their way through the paper ribbon. The keyboard does not type or print letters of the alphabet. It merely makes a perforation which acts as a symbol for the letters. The perforations are thus similar to those in a pianola roll, which operates a mechanism for producing the actual notes. The perforations in the Monotype paper roll cause the mechanism in the casting machine to produce lines of perfectly cast and finished type, arranged in the order produced by the operator.

When the "copy" is finished the perforated part of the paper roll is removed from the keyboard and transferred to the casting machine. Here, by an exceedingly ingenious process, the perforations set in motion a series of dies into which a pump forces molten metal, thus causing a type to be cast which has on its upper end a reproduction of the letter contained in the die-case.

This molten metal is solidified instantly by a stream of water kept flowing through the steel mould to keep it cool. As the die is withdrawn from the mould, the newly cast letter is ejected into a groove; and letter after letter is cast until the line is finished, when it is automatically withdrawn from its groove and placed in a long iron tray called a "galley," where the lines are accumulated until the whole of the "copy" is completed.

into their proper sequence. The plates are inked by rollers. The paper, which is cut to the proper size, is automatically fed to the press, and passes over the inked plates, after which it is delivered at the far end of the press in perfectly printed sheets. On such presses, which enable remarkable precision to be obtained, the colour work of "the Great Eight" is produced.

The great printing-presses are bewilderingly beautiful examples of mechanism. Magnificent in their proportions, they are probably between fifteen and twenty feet in height, so that they reach close to the ceilings of the great rooms in which they work. The noise of their working is almost overwhelming to the visitor to the press-room. Try as he may, it is impossible for him to hear himself speak without shouting. Even shouting makes little effect in the uproar and whirr of the wheels, and a sharp whisper close to the ear is perhaps the best method of becoming audible.

Although the pandemonium of noise may offend the ear, the eye cannot help being fascinated at the sight of the precision of the machines as the endless coil of paper is carried over one of the large copper cylinders, whose making was described in the section dealing with rotogravure, to be impressed with the pictures and the type which are etched upon it, and then carried over heated drums to a second cylinder which prints the other side of the paper, after which an ingenious apparatus delivers the sheets, folded in their proper order, to a man at the delivery bench, who removes them in batches of a convenient number. The rapidity with which the photogravure machine works is such that it can print six thousand eight-page sheets on both sides in an hour. Through the action of the heated drums over which the paper passes when it has been printed, each sheet is absolutely dry and incapable of being smeared when handled after it leaves the machine.

Printer's Ink. It is trite to say that printer's ink

is not like writing ink. While the latter must necessarily be liquid to flow easily and limpidly from the point of the pen, it is equally essential that the ink for printing must be thick and viscous, so that it can spread evenly on the inking-tables of the printing-press, from which it is uniformly transferred to the inking-rollers; for in these days of universal education such former secrets of the construction of a printing-press are the commonplaces of everyday knowledge.

Printer's ink, in its original form, may roughly be described as a compound of lamp-black mixed with resin and oil, ground together between closely fitting granite or



THE MODERN METHOD OF TYPE-SETTING BY A WONDERFUL MACHINE THAT FORMS AND ARRANGES THE LETTERS: A SECTION OF THE MONO-TYPE KEYBOARD ROOM OF "THE ILLUSTRATED LONDON NEWS" AND "SKETCH."

block from this second negative is printed in red ink. The third negative is taken through a red filter, which allows only red light to pass. The red tiles will therefore be opaque, and the blue sky in the background appear clear. This plate is printed in blue ink.

The negatives thus made are printed on the metal and etched in exactly the same way as has been described for black-and-white work. And the printing of them is done as a rule first on the yellow, then on the red, and finally on the blue printing plate.

While the whole subject of colour-reproduction appears exceedingly simple when seen in such an establishment as that of Messrs. Lascelles, or Nickeloid, Ltd., it is really a highly complex and intricate one, and requires infinite study and practice in order to obtain satisfactory results.

The quality of the printed illustrations required by the modern papers has created a demand for specialised machinery and appliances. Messrs. Hunter-Penrose, Ltd., whose firm has amalgamated the two oldest supply houses in the world, manufacture the most modern machinery and apparatus for all reproduction purposes. Notable among them is what is known as the "arc-gear" camera, which is fitted with powerful arc-lamps and mounted on a spring stand, so that, no matter what vibrations may occur near it, the resulting negative is always produced without blurring.

An idea of the perfection to which the firm's machinery has been brought is shown by the statement that the cutting machine used for cutting out the white part of the illustration blocks rotates at a speed of between eighteen and twenty thousand times a minute. One quality Messrs. Hunter-Penrose, Ltd., share with the other firms engaged by "the Great Eight" is that all their machinery and apparatus is produced by British workmen in their extensive factory in Wellingborough.

Printing. Every line which appears in print is, in its original form as it comes from the author, known as "copy." From the Editor it goes to the overseer of the composing department, who distributes it to the compositors with instructions as to the kind of type required. While originally type was always set by hand, letter by letter, with spaces between the words, machinery is now employed, and the Monotype machine, known as the Lanston Monotype, is used by *The Illustrated London News* and the *Sketch*, and most of the other papers of "the Great Eight."



THE MECHANICAL WONDERS OF PICTORIAL JOURNALISM: ONE OF THE ROTARY PHOTOGRAVURE MACHINES USED IN THE PRODUCTION OF "THE ILLUSTRATED LONDON NEWS" AND "THE SKETCH."

From the Monotype, as from the type set by hand, proofs are taken and the errors corrected; the matter is then ready for the printer. The advantage of the Monotype over hand work can be seen when it is said that, in the old days, the hand compositor could not compose more than a thousand letters, correct his errors, and redistribute the used type for further use in an hour, while the Monotype can produce over 9000 letters in the same time. The machine is thus one of the most commercially useful, as it is one of the most ingenious, ever invented for the use of the printer.

Not the least interesting fact in connection with the printing of a paper is that, despite the time devoted to setting the type and preparing the blocks, neither of them goes on the printing-presses. The material for each page is placed in a large, heavy rectangular frame called a forme. These formes are taken to the foundry, where a wax mould is made, which is placed in a bath which electrically deposits copper on the wax, so producing exact facsimiles in that metal of type and illustrations.

For the fine colour reproductions for which *The Illustrated London News* in particular is distinguished not only among its sister papers, but also throughout the world, the moulds are made in a special manner on sheets of soft lead instead of wax. The lead sheets are placed in contact with the original blocks and subjected to the enormous pressure of 2000 tons. In this way the most perfect reproduction of the original is obtained, its finest markings standing out with exquisite clarity when looked at under a magnifying lens.

The pages are arranged on the printing-machine in such a way that, when printed and folded, they fall



IN THE ELECTROTYPING DEPARTMENT OF "THE ILLUSTRATED LONDON NEWS" AND "SKETCH": A 2000-TON ALBERT GALVANO LEAD MOULDING PRESS, chilled-iron rollers. To obtain the effects demanded by the artistic production of the papers of "the Great Eight," however, such ink would be far too

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(Continued)
crude for their purpose. In common with the other refinements of our age, the researches of modern chemistry have brought about many changes in the supply of this important requisite for the printer. To-day printing-ink is manufactured by grinding the pigment into a varnish so that the latter may carry the former on to the printing-machine which transfers it to the paper.

An ink-factory, therefore, consists practically of three separate departments—one which produces the varnish; a second which manufactures the colours; and a third which grinds them into the varnish. These varnishes are roughly divided into two classes, resin and linseed. The resin is distilled in great iron stills, the process being repeated again and again until the resinous acid, which would be destructive alike to the type and blocks, has been removed and the oil alone is left. This resin oil, however, is suited only for the cheaper kinds of ink. As if it were as precious as wine, the linseed oil needed for ink-making is matured before use, and is subjected to a very high temperature in enormous pans. The heat drives off the volatile elements until finally only a thick, viscous oil remains.

The department which manufactures pigments has to deal with an enormous number, for such a firm as Messrs. B. Winstone, of Shoe Lane, which enjoys the reputation of being the leading manufacturers in the country, supplies so wide a range of colours that they seem to be practically endless. Twenty or thirty shades of red would be quite easy to be obtained from them, and the same is true of any of the other tints. Even the blacks, which are produced from hydro-carbons and are called carbon blacks, lamp blacks, oil blacks, and so on, according to their origin, are as numerous as any of the other colours by the combining and mixing of which endless shades can be obtained.

When the constituents of the printing-ink have been brought together, they have to be suitably combined. This is done in a range of machines which include mills and mixers, the former crushing the combined varnish and pigments again and again between closely set rollers. These operations involve considerable skill as well as time, the use of a large and costly plant, and the constant supervision of the chemists. The laboratory in such an establishment as that of Messrs. Winstone is constantly at work testing new materials and seeking for the attainment of finer results.

and loaded into motor lorries and sent to the firms whose mission is to distribute them all over the country.

Distribution. With the completion of the week's issues of "the Great Eight," a new problem unfolds itself. This is their distribution to the readers. Distribution is a problem of considerable magnitude, seeing that these readers exist in every part of the habitable globe. The problem, vast and interesting as it is, does not concern Inveresk House to anything like the extent it might, for to-day such famous distributing houses as Messrs. W. H. Smith and Son, Messrs. William Dawson and Sons, Messrs. Horace

Carlisle, then the terminus of the line, and at a quarter past two in the afternoon the papers were carried thence to Glasgow by post horses.

Soon after the railways started, the companies allowed various local people to open stalls for the sale of cheap commodities. At Euston a man paid £60 a year for his stall, and once boasted that he made a profit of £1000 in ten months. That boast was his undoing, for the railway company felt that it was entitled to a larger share of such profits, and in 1848 it advertised for offers for the stall rights all over their system. Mr. W. H. Smith, who rose to be First Lord of the Admiralty in Lord Beaconsfield's Cabinet (in which capacity he was supposed to have been satirised as the First Lord of the Admiralty in "H.M.S. *Pinafore*"), was then at the head of the firm, and his bid for the bookstall rights was accepted under contracts which lasted for nearly fifty years.

With the passage of time, various departments have been added to the activities of the firm, whose news department has grown to such dimensions that the publications it sends by post in wrappers involve an expense for stamps of considerably more than £30,000 a year, and this postal dispatch is now little more than a side line of the business of the firm whose head is Viscount Hambleden.

Founded nearly a quarter of a century before *The Illustrated London News* was published, the house of Messrs. Horace Marshall and Son has been closely associated with the floating and success of each of the journals of "the Great Eight," for the firm purchased and distributed large supplies of each of the first issues, and to-day it still plays its part, week by week, in circulating these papers through London, the provinces, and throughout the world. The business was

originally founded by Mr. William Marshall, who was succeeded by his son, the Horace Marshall of the title; and he in his turn was succeeded by his son, the present Lord Marshall.

Starting originally in Leadenhall Street, the premises were soon moved nearer to the newspaper world, at first to Ludgate Hill, then to Fleet Street, and more recently to Temple House, Temple Avenue, which was specially designed and built for the work of newspaper distribution. As the headquarters of one of the principal forces of newspaper circulation, it is within easy access



HOW "THE ILLUSTRATED LONDON NEWS" HAS LED THE WAY IN MODERN METHODS OF COLOUR REPRODUCTION: THE WONDERFUL MACHINE THAT PRODUCES OUR ILLUSTRATIONS IN COLOUR GRAVURE.

Marshall, Messrs. Gordon and Gotch, or Messrs. Hachette, to name only a few of those who are vitally interested, undertake to supply the world with copies, which are taken from the publishing office in great motor lorries. Every means of locomotion has, naturally, to be impressed into the service of the papers, from feet to flying.

Realising the necessity for swiftness, Messrs. W. H. Smith—the fortunes of whose firm were founded on the organisation of newspaper distribution—determined to expedite matters, and undertook to send the papers to their destination by the morning coach which left



THE SMALL BEGINNINGS OF A GREAT NEWSPAPER-DISTRIBUTING BUSINESS: THE ORIGINAL SHOP OF "W. H. SMITH" IN DUKE STREET, AFTERWARDS DEVELOPED INTO W. H. SMITH AND SON.



THE EVOLUTION OF A GREAT NEWSPAPER-DISTRIBUTING BUSINESS: THE PRESENT MAGNIFICENT PREMISES OF W. H. SMITH AND SON AT STRAND HOUSE, PORTUGAL STREET.

The Warehouse. It is in the warehouse as in the printing office of journals like *The Illustrated London News* that the wit of man has devised machinery which seems to be endowed with a high intelligence, so accurate and so delicately poised are the operations of which it is capable. This is particularly true of the folding machines, which feed themselves automatically and deal with the great piles of sheets that reach them. The finished sections are then "insetted," wire-stitched, trimmed, packed,

half a day earlier than the Post Office vans. To this end the firm started a service of vans which collected bundles of newspapers from the printing-offices and took them to the coaches. When railways succeeded coaches, they were immediately pressed into the firm's service, which, as early as 1847, employed nine special engines for their newspaper traffic; and in that year the first special newspaper train left Euston at five o'clock every morning. This train proceeded to Beattock, forty miles north of

to the papers, on the one hand, and to the termini of the great railway systems, as well as to the main roads which lead to inner and outer London, on the other. It was this firm which originated the railway bookstalls which were later disposed of with the rest of its retail interests.

The scope of the firm's wholesale business is a vast one. Day by day it packs and despatches hundreds of thousands of parcels to the newsagents

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Inveresk House and Its Makers. Originally erected twenty years ago, the building has been improved out of all recognition in order to adapt it to its new purpose. In this it takes its place in the line of the rebuilding schemes which are changing and improving the architecture in the West End of London. Restricted to its original site, with its frontages on the Strand, Aldwych, Wellington Street, and Exeter Street, it was impossible to extend its foundations, as they occupied the whole island circumscribed by those thoroughfares.

To meet the demand for increased space it was necessary to build upwards, where, as the Americans so characteristically say, "rent is cheap." To do this it was necessary to remove the flat-pitched roof, the slate-covered dome, and the range of dormer windows of the old building, in order to add two new floors, accentuated by a double range of dormer windows; while the old dome has been replaced by a more lofty one, and instead of the dull slate it has been covered with shining copper.

Internally, the change has been even greater. How great it has been can be appreciated when it is stated that it involved the removal of some 12,000 tons of material. As originally designed and erected, Inveresk House was built to house a daily newspaper, and it had therefore to conform to the rules and regulations of the London Building Acts as applied to structures of that class. The reconstruction necessary to adapt it to the needs of "the Great Eight" compelled the removal of division walls more than 27 in. thick and 130 ft. in length, rising from the sub-basement floor 35 ft. below the street level to the roof 120 ft. above it.

In addition, various other thick brick walls enclosing internal areas had to be removed, as well as a chimney-shaft 120 ft. high and 10 ft. square; with staircases, passenger and goods lifts, conveyors, ventilating plants, and heavy constructional steel-work, which last required the use of the most modern appliances to cut and remove it. Although this extensive demolition was a complicated undertaking, it was not so intricate a problem as that of the reconstruction of the building. That required a carefully thought-out plan of procedure to produce a structure whose equipment is the last word in modernity, and reflects great credit on all concerned in evolving the scheme and carrying it out successfully.

The architect entrusted with the important work of transforming Borthwick House into Inveresk House is Mr. Thomas Sidney Vickery, F.R.I.B.A., of the firm of George and T. S. Vickery, which also includes Mr. H. A. Ross, A.R.I.B.A. The son of a famous architect, the late Mr. George Vickery, A.R.I.B.A., who devoted his talents, for the most part, to designing buildings for commercial puposes, Mr. T. S. Vickery naturally had a bias towards following in his father's footsteps. Unlike most fathers, who declare that the last profession in the world in which they desire to see their sons is their own, Mr. George Vickery encouraged his son's taste towards architecture, and not only sent him to the Architectural Association Schools to study, but later took him into his own offices and gave him his articles.

The result was an uninterrupted training under the best possible conditions, for, as time went on, father and son collaborated in a considerable amount of important work. Although, in view of the remarkable changes which have marked the London of the last twenty-five or thirty years, Mr. Vickery would not declare with Horace that he had "built a monument more lasting than bronze," or even echo Wren's famous phrase when gazing on his greatest achievement, he may well be proud of the transformation he has wrought in the late *Morning Post* building.

With the elder Vickery devoting himself to commercial work, his son naturally gravitated towards that department of art, and he soon acquired an intimate knowledge of the requirements of the newspaper trade, with the result that he and his late father designed buildings for many publishing houses, among them Messrs. Marcus Ward and Co., Messrs. Alexander Pirie and Sons, the Culter Mills Paper Company, and the Educational Supply Company's new premises in High Holborn; also the extensive warehouse of Messrs. J. and P. Coats, Ltd., and that of Messrs. J. and K. Connor, in Bridgewater Square; the head offices of the Union Cold Storage Company, West Smithfield; the late City Union Club, London Wall; Lombard House, the new headquarters of the National Pawnbrokers' Association; the new offices and power station for the City of London Electric Lighting Company in Aldersgate Street; and the Children's Hospital at Highgate, presented to the nation by Mr. R. Kohnstarum. Mr. Vickery is also the surveyor of the Worshipful Company of Butchers, and carried out the extensive alterations and improvements to their Hall premises a few years ago.

To carry out Mr. Vickery's scheme the famous firm of Messrs. Trollope and Colls was engaged, for their record in general commercial and industrial building is unrivalled. This record has been attained, for the most part, as the result of the company's operations in the heart of the financial district of London, and includes banks, insurance offices, exchanges, and blocks of offices like the Baltic Exchange, Electra House,

engineering and public works department has constructed bridges, railway viaducts, aqueducts, reservoirs, and roads of reinforced concrete; while during the war they built enormous aircraft and munition factories, the contracts for which alone amounted to over £3,500,000.

Pursuing its artistically conquering way across the ocean, many of the important commercial buildings in the Far East have been built by the firm. Noteworthy among them are the Hongkong and Shanghai Bank, the Chartered Bank of India, Australia and China, the Peninsula Hotel, the Municipal Offices in Hongkong, and a large reservoir in Kowloon.

Difficult as was the preparatory work that the demolition of Inveresk House had involved, it was exceeded by the problems which confronted Messrs. Trollope and Colls in their activities in Shanghai, for the soil is of such a treacherous character that it is not unusual for an ordinary building to sink into the ground as much as twelve inches during the course of its construction, and several cases have been recorded in which the drop has been twice as much. Such difficulties, happily, did not confront the firm in Inveresk House, whose improvement over the old building may be judged when it is stated that it contains approximately 73,000 square feet of floor space against the 50,000 square feet which was its original measurement.

As even so great and comprehensive a firm as Messrs. Trollope and Colls do not undertake everything in building, a number of sub-contractors had to be employed. The principal ones were Messrs. Redpath

Brown and Co., for steel construction; Messrs. Fenning and Co., for marble work; Messrs. Waygood-Otis, Ltd., for electric lifts; Messrs. Tyler and Freeman for electric installations; Messrs. Pontifex and Co., for sanitary fittings; Messrs. Sulzer Bros, for heating and hot-water services; and Messrs. T. and W. Farmiloe, Ltd., for Vita-glass.

The characteristic appearance of the exterior of Inveresk House which gives it a distinction of its own and makes it stand out against its two neighbours, the Lyceum Theatre—which, in spite of the many changes, remains a monument to the genius of Henry Irving and Ellen Terry—on the one hand, and, on the other, the Gaiety Theatre, is due to the use of Empire stone, which was made to match the grey granite used in the old building. Empire stone is a cast stone which can be made to match any natural stone, the best of

which it equals in appearance and wearing qualities, but surpasses in durability. It is composed of granite chippings and the best Portland cement, and has a facing, about three-quarters of an inch thick, of finely crushed natural stone similar in colour to that which it is desired to match. By reason of its qualities, both artistic and durable, it is employed very extensively on important buildings in London, the acid of whose atmosphere plays such havoc with certain forms of building material.

Those interested in the artistic effect of Empire stone as illustrated on Inveresk House can also see it at the famous Café Royal in Glasshouse Street and Quadrant Arcade, and at the Regent Arcade, Argyll Street; while the new Pavilion in Bournemouth gives silent but eloquent testimony to the beautiful effect it is capable of imparting to the architect's dream of form. Another important use of this stone is for staircases, which are now being extensively formed of it.

The whole building is centrally heated by means of hot water and electric radiators. This work has been performed by Messrs. Sulzer Brothers, 31, Bedford Square, W.C.1, who for close on a century have been pioneers in all branches of mechanical engineering. Some idea of its activities may be gained when it is stated that within the last eighty years, when the first plant was erected for the purpose, over 40,000



INVERESK HOUSE AS IT WAS: THE OLD "MORNING POST" BUILDING (THEN CALLED BORTHWICK HOUSE) BEFORE THE RECENT RECONSTRUCTION.

These two photographs illustrate very clearly the architectural changes involved in the transformation of Borthwick House, the old "Morning Post" building, into Inveresk House, the home of "the Great Eight" among illustrated weeklies. The left-hand photograph of Borthwick House was taken in April 1908. In the right-hand one Inveresk House is shown with the reconstruction almost finished. The original cornice has been retained with a new row of full-sized windows and two new floors with "dormer" windows.



INVERESK HOUSE AS IT IS TO-DAY: A VIEW SHOWING THE ORIGINAL CORNICE RETAINED, WITH NEW FLOORS ABOVE IT, AND THE NEW COPPER-SHEATHED DOME.

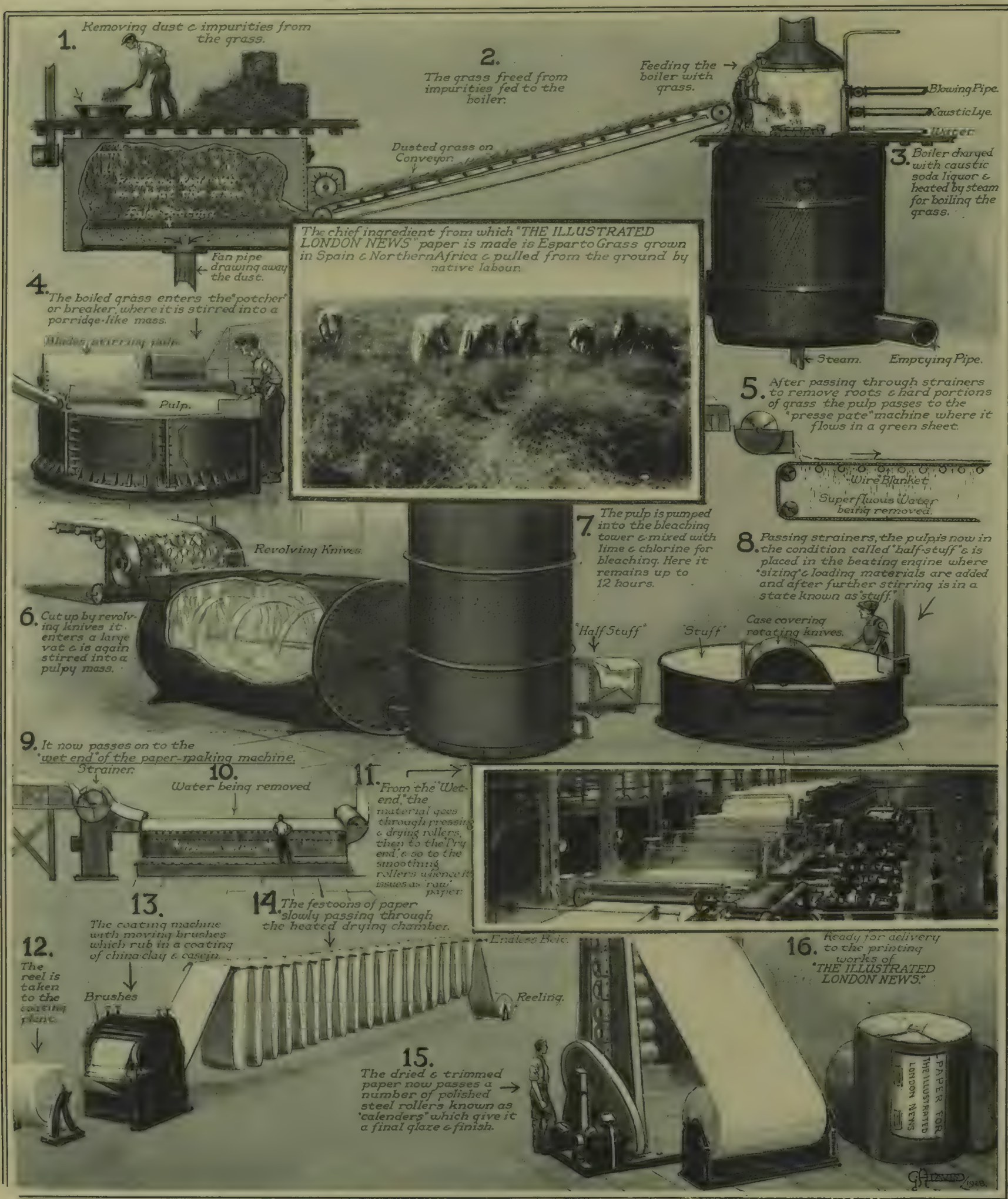
Furniss House, and the Institute of Chartered Accountants, to name only a few of them. Indeed, during the past quarter of a century and more, this firm has been largely instrumental in bringing about the transformation which has been effected in the best-known thoroughfares in the City, with whose building it has been connected since the early part of the reign of George III.; so that it goes back exactly a century and a half.

It was in 1778 that the firm of George Trollope and Sons was founded in Westminster; and in 1903 it amalgamated with the City firm of Colls and Son, established in 1840. Since the amalgamation, Messrs. Trollope and Colls have been responsible for the construction of many of the "stately homes of England," whose beauty and magnificence are a tribute to their constructive skill.

A list of those for whom they have built both wisely and with artistic perfection would include a large number of the most noted names in DebreTT and Burke, as well as what has been called the contemporary record of international biography, "Who's Who." In addition, they have had contracts for many of the finest hotels, restaurants and clubs, like the Carlton, whose new front was designed by Sir Reginald Blomfield, R.A. London, however, has not monopolised Messrs. Trollope and Colls' activities, for they extend throughout the country, where, in addition, their

FROM ESPARTO GRASS TO "I.L.N." PAPER: A SIMPLE EXPLANATION.

Drawn by our Special Artist, G. H. Davis, from information supplied by the Inveresk Paper Company, Ltd.



STAGES IN THE EVOLUTION OF ESPARTO GRASS INTO ART PAPER FOR "THE ILLUSTRATED LONDON NEWS": SOME OF THE PROCESSES.

These diagrammatic drawings show in simple form the interesting and complicated process of converting esparto grass, plucked from the soil of Spain and Northern Africa, into the art paper upon which "The Illustrated London News" is now printed. The African grass is pulled from the ground by native labour, and is transported by camels to the roadside; then taken by lorries to the rail-head, thence by train to the coast, and to this country by steamer, and thence to the store sheds of the paper mills. After the dust has been removed in a special machine, it is boiled in a chemical solution, and thence goes to the breaker, or "Potcher," which converts it into a pulp. Next it passes through strainers to the "Presse Pate" where, on an endless belt of fine wire mesh, it flows in an even sheet to allow the water to drain off. Revolving knives cut it up again and pass it into a vat, where water is added and Archimedian screws stir it into pulp.

Then it goes into the bleaching towers, where it is turned by acids from its natural green to white, and after pressing becomes what is known as "Half Stuff." Taken to the "beating engine," it is again reduced to pulp, sizing and loading materials are added, and it emerges as what is called in the trade, "Stuff." Having passed the strainers, it now enters the "wet end" of the paper-making machine, and first superfluous water is removed, then rollers press or couch the sheet; next steam-heated drying rollers do their work; and, after passing smoothing rollers, it emerges as raw paper, and is "reeled." Now the better-class paper goes to the coating machines, where brushes rub into its pores china clay and casein. Once more it is dried and reeled. Finally it is passed under polished steel rollers known as "calenders," which put on the final glaze and finish. An article dealing with paper and its manufacture commences on page xxiv.

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When it is remembered that a newspaper weighs, perhaps, a couple of ounces and there are nearly 36,000 ounces in a ton, the magnitude of the company's operations begins to be dimly realised.

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Further light is thrown on it by the statement that Messrs. Dawson publish in their Red Book, now in its thirty-fifth edition, the names, price and terms of subscription of over 5,000 publications, issued in every part of the world. A copy of this book will be sent post free to any reader of "The Illustrated London News" who asks for it.

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(Continued from page xix.)

buildings have been equipped with heating and ventilating apparatus. The new Sulzer heating and ventilating plant of Inveresk House replaces the one installed over twenty years ago, when the *Morning Post* first occupied it; and the fact that the Sulzer firm was employed on the much larger new building is sufficient indication that it has moved with the times, for its laboratories and workshops have been devoted to continuous experiments with a view to designing and developing new ideas.

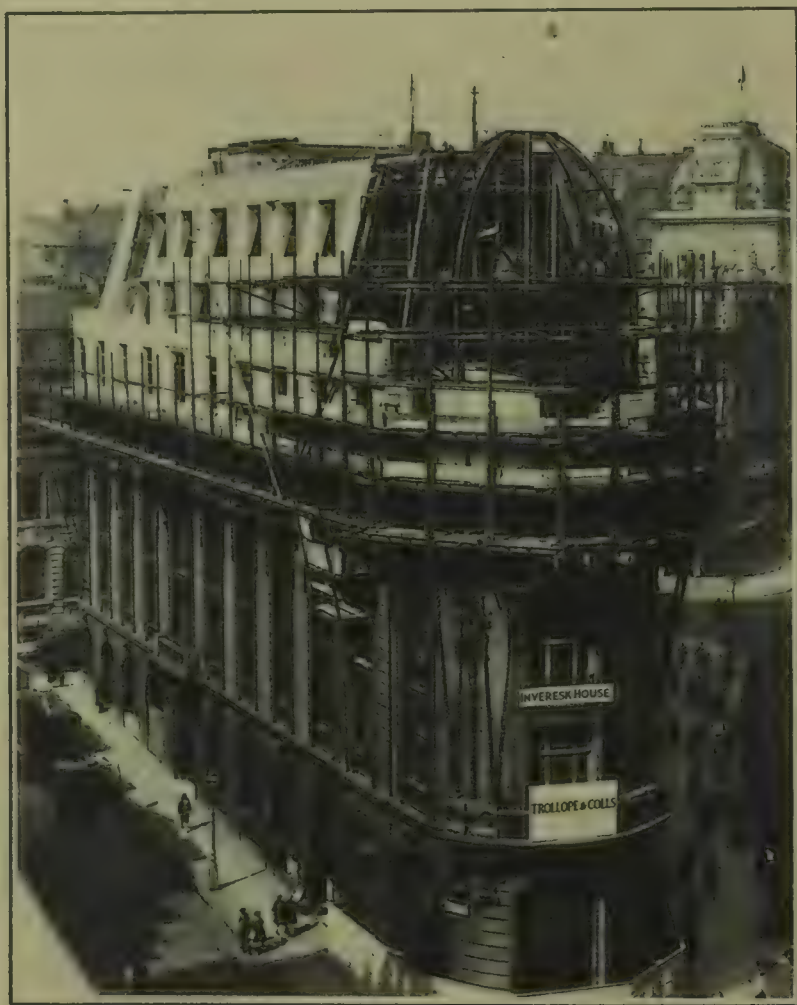
Since the war the use of electricity for heating purposes has grown by leaps and bounds, and as a result of continuous research and experiment during the last ten years a new method has been designed by the firm. This involves taking current during the hours of the night, when electricity can be obtained far more advantageously than at any other time. The Sulzer Patent Electro Boiler and Thermo Storage system produces and accumulates during the night hours all the heat required by a building during the time it is working.

Not the least of the important considerations in making Inveresk House all that it should be for the comfort and health of those who spend so large a proportion of their lives within its walls was the sanitary equipment. This was entrusted to Messrs. H. Pontifex and Sons, Ltd., 43-44, Shoe Lane, E.C.4, whose experience in manufacturing sanitary fittings of the highest quality goes back a century and a half. Their aim has always been to combine simplicity of design with those practical features which their knowledge and experience have proved pre-eminently suitable for their purpose. For this reason they selected their "Perfection" design of lavatory basin for Inveresk House, adapted it to the island position of the site, using similar articles to those supplied by them for the new Bank of England building.

This series of "Perfection" fittings, which also includes baths and other domestic requirements, can be seen at their extensive show-rooms at Pontifex House as well as at their west establishment, Messrs. A. Samuel and Sons, Ltd., 9-13, George Street, Manchester Square, W.1, close to the Wallace Collection. The latter firm was acquired by Messrs. Pontifex some time ago, and offers considerable advantages to those clients to whom a West-End show-room is convenient.

Just as it is written "Man cannot live by bread alone," so it is essential that, in addition to a plentiful supply of air and light, ample room and pleasant surroundings, the comfort of the worker must be provided for, especially when the worker belongs to the artistic and temperamental class from which editors, authors, journalists, and artists are drawn.

When it is said that the furnishing of the offices has been supplied by Messrs. Maple and Messrs. Waring and Gillow, the first and last necessary word has been written, for their names have achieved a world-wide reputation which is synonymous with the best that can be supplied. Frequent visits were paid to the famous house in Tottenham Court Road to make a necessary selection from the large and varied stock of British and Oriental carpets and rugs which are among their specialities, as well as for the furniture, the desks, tables, chairs, cupboards, bookcases, filing cabinets, and office accessories



THE TRANSFORMATION OF BORTHWICK HOUSE INTO INVERESK HOUSE: THE BUILDING UNDER RECONSTRUCTION, SHOWING THE NEW STOREYS ADDED AT THE TOP.

In the alteration of the building the exterior character of the original architecture has been retained, although the interior was completely gutted and reconstructed, as indicated in the illustration opposite.

needed for such an enterprise as the conduct of the greatest papers of their kind in the world involves.

Messrs. Maple have recently opened a magnificent entrance hall in Tottenham Court Road in which everything required for the complete furnishing and equipment not only of the office, but of the home, may be

seen and inspected at leisure. This hall, which is of classic design, is 150 feet long. Through *The Illustrated London News* Messrs. Maple and Co. extend an invitation to all its readers to visit the exhibition.

Among the means adopted for safeguarding Inveresk House from fire has been the introduction of the Fire Resisting Electro-Copper Glazing, which has been supplied and fixed by Messrs. Cuthbert and Taylor, Ltd.

The product of the firm unites a high artistry with its purely utilitarian purpose. The installation of Electro-Copper Glazing to resist and restrict the spread of possible fire has long been recognised as an absolute necessity, not only in new buildings, but in old ones.

Anyone who follows the events recorded in the daily Press cannot help being struck with the frequency with which great houses situated in remote districts have been destroyed. This has drawn attention to the need of an increased use of the firm's fire-resisting glazing.

The London County Council has included in the London Building Regulations a specification for the manufacture of this glazing, which is adopted as the standard for all the buildings, and has undoubtedly helped to safeguard them from the possibility of fire. Messrs. Cuthbert and Taylor have supplied and fixed it in many of the great buildings in London and throughout the United Kingdom.

Among banking institutions Lloyds Bank takes one of the highest places in regard to the magnitude of its responsibilities and resources, and its widespread interests. It is one of the largest and best-known banks in Great Britain, and is the representative of some of the oldest of the private banks dating back to the seventeenth century. It was established as a joint-stock bank in 1865. At the end of that year, the total of its first balance-sheet was £1,346,313 9s. 4d., and the number of its offices 14. Its remarkable rise and progress cannot be illustrated in a more striking manner than by quoting the corresponding figures for June 30, 1928—viz., balance-sheet



THE ARCHITECT WHO TRANSFORMED BORTHWICK HOUSE INTO INVERESK HOUSE: MR. THOMAS SIDNEY VICKERY, F.R.I.B.A.

Mr. Vickery is a member of the firm of George and T. S. Vickery, and is a son of the late Mr. George Vickery, A.R.I.B.A. Many notable commercial buildings designed by them are mentioned on page xix. Mr. T. S. Vickery is also surveyor to the Worshipful Company of Butchers.



THE DRASTIC RECONSTRUCTION OF THE INTERIOR OF THE BUILDING NOW KNOWN AS INVERESK HOUSE: A VIEW OF THE GIRDER FRAMEWORK OF SEVERAL FLOORS WHILE THE WORK WAS IN PROGRESS.

total, £417,271,120 13s. 3d., and the number of offices in England and Wales, over 1750, in addition to several in India and Burma.

Side by side with this growth the bank has become steadily more democratic in constitution, and so much so is this now the case that it is actually owned by no less than 63,000 shareholders. Continuing its policy of expansion, a large number of additional offices have been opened in the London district during the last few years, and it is interesting to note that, as announced in another page, the new Aldwych branch of the bank will shortly be opened in Inveresk House.

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Paper-Making.

While it would be impossible to state with any certainty what is the first essential for the production of a journal, the dominance of the paper problem is

As far as Europe is concerned, paper was made from cotton about 600 A.D., and from rags about 1300 A.D. In the "Archæologia," Mr. Joseph Hunter states that the earliest paper he had seen was a manuscript account-book dated 1302. It was probably manufactured in Bordeaux.

The first English paper-maker of whom there is definite information was John Tate, a son of Sir John Tate who was Lord Mayor of London in 1496. The paper he produced was so far superior to anything known up to that time that at the end of Wynkyn de Worde's edition of Bartholomæus's "De Proprietatibus Rerum," published in 1494, its thin paper made by John Tate in England is commended. Wynkyn de Worde, it is worth recalling, was the partner of Caxton, to whom he succeeded in business. Even at that time Tate's paper had a watermark, consisting of a double circle containing an eight-pointed star. Tate's paper-mill was located in Hertfordshire, in which county later the first mills to make paper by machinery were also established at the end of the eighteenth century.

It was, however, the importation in 1857 of esparto, a Spanish grass, which particularly concerns those who are interested in the story of "the Great Eight," for it is from esparto that the paper for them is manufactured. While esparto grows abundantly in southern Spain, it is still more abundant in northern Africa, where, under the name of alfa, it grows on great prairies bearing the name of "alfa seas," in consequence of the undulating effect of the blades due to the action of the wind. Necessity, which is the mother of invention, brought it into general use for the manufacture of paper in the early 'sixties, for a great shortage of

rag compelled the manufacturers to look for a suitable substitute.

The richness of the white colour of esparto-made paper, and the permanency of the colour, make it peculiarly suitable for high-class printing. It was inevitable, therefore, that when the Inveresk Paper Company, Ltd., was reorganised a few years ago, the far-seeing vision of Mr. William Harrison, its Chairman, should realise the value of esparto grass, especially as the papers he subsequently gathered into the Inveresk group housed in Inveresk House used paper made from that material.

Unlike English grass, esparto is not cut, but is pulled up by the Arabs by means of a stick strapped

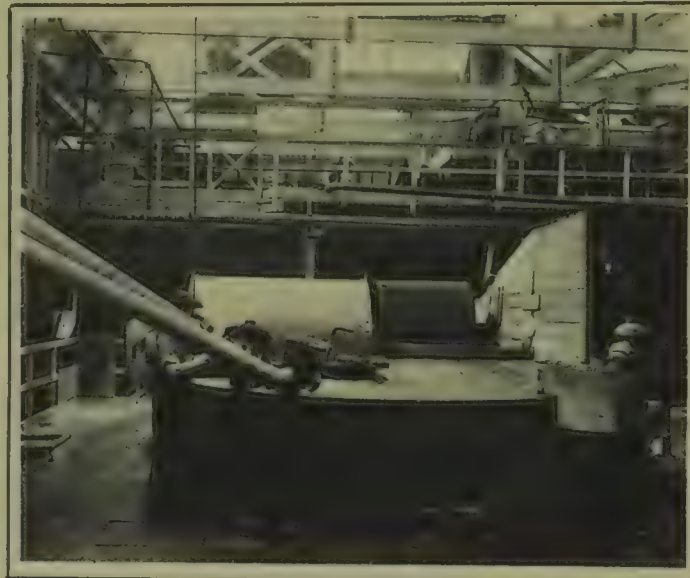
[Continued overleaf.]



MAKING PAPER FOR "THE GREAT EIGHT": THE TOP OF THE GRASS BOILER AT AN INVERESK MILL.

one which will be universally recognised. Paper, as everybody knows, followed the use of papyrus, from which, indeed, it derived its name. The papyrus plant, growing in the delta of the Nile, came originally from Egypt, and peelings from it in the shape of thin layers were used to replace the tree-bark peelings then in use.

The earliest known specimens of writing on papyrus date back to the Third Dynasty, roughly, 4000 B.C. It is believed that centuries before the Christian era the means of making paper from papyrus was in use in Egypt, and it is said that the Chinese, who are constantly held up as possessing the earliest elements of modern civilisation, converted the bark of the mulberry-tree into a fabric akin to paper as we know it, while they also manufactured a paper from cotton.



MAKING PAPER FOR "THE GREAT EIGHT": THE GRASS BEING PULPED IN THE "POTCHER" AT AN INVERESK MILL.

The circular traps lead down into the boilers where the esparto grass is boiled in a chemical solution. Through these apertures the cleaned grass is shovelled in, and stray strands of it are shown behind the nearest trap (see left-hand photograph). The raw grass, after having dust and other impurities removed in a special machine, and being softened with steam and boiled in a chemical solution, appears in the "potcher," where it is reduced to pulp.

Established 1840.

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THOUGH STILL UNPRINTED AT 4 A.M. the newspaper arrives many miles away at the breakfast table of the householder because, in the neighbourhood of Fleet Street, and in the "small hours," when the world is abed, Horace Marshall and Son's work is being capably and loyally done.



TEMPLE HOUSE.

FROM PRINTING-MACHINE TO VAN, then to warehouse for packing, then in parcels to van again, and on by rail or motor to the newsagent—that is the course of your daily newspaper, morning by morning; and but for Horace Marshall & Son's long experience, numerous and expert staff, and thoroughly modern equipment, many hundreds of thousands of newspaper readers would be without the news.

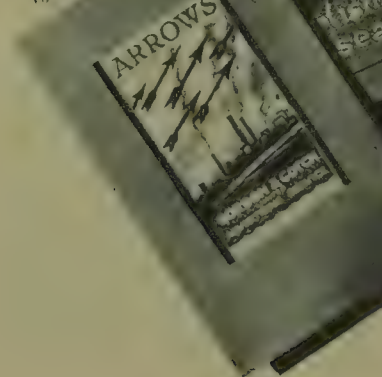
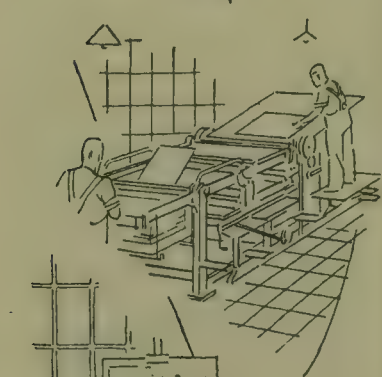
ON 27,500 EARLY MORNINGS, whatever the weather, despite every obstacle and difficulty, this work has gone on—first in a small warehouse, then in a larger, then in a larger still; and then Temple House was specially built and designed—a model establishment for the purpose of rendering this service to the public.

THE PUBLIC HAS NOT KNOWN very much about it, but this steady, uninterrupted supply of newspapers—with magazines, periodicals, books, and other publications—has been going on all the time. And it continues to-day.

ORDERS GIVEN TO A NEWSAGENT, A BOOKSELLER OR A STATIONER WHO OBTAINS HIS SUPPLIES FROM HORACE MARSHALL & SON WILL RECEIVE THE BEST ATTENTION BECAUSE OF THE EFFICIENCY OF THIS HOUSE.

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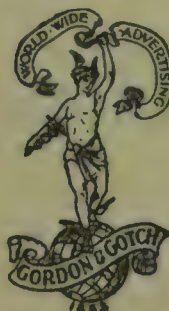
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Agencies throughout the World

(Continued.)

to the wrist. The harvesting of this grass is a picturesque sight, for whole families take part in it, in much the same way as families go hop-picking in Kent. These harvesters work under the supervision of a chief, who acts as a contractor. He receives the money earned by them and pays it out to the workers in accordance with the weight of the material they have gathered. The gathered esparto is taken by camel and donkey across the desert, whence it is carried by motor-lorry to the railway terminus, and thence by rail to Arzew and Oran for shipment to the Firth of Forth for delivery at the Inveresk and associated mills in Scotland and England. These two North Algerian towns have been converted into busy ports as the result of the export of esparto grass, 125,000 tons being shipped in a year. At Arzew and Oran the grass is sorted for roots and other impurities, then made into bales. The rope used in baling is made from the grass, which is so light and strong that the cables for Spanish ships are still made from it.

The Inveresk Paper Mill, of which we give some account below, forms but a small part of the Inveresk Paper Company, Ltd., a holding company with a capital of £4,150,000, controlling twenty-six pulp, paper, and chemical mills, ten periodicals, and eleven London, Provincial, and Sunday newspapers. Five centuries before Edwin founded Edinburgh, Musselburgh was in existence, whence the grandiloquent quatrain—

Musselburgh was a borough
When Edinburgh was nane;
Musselburgh 'll be a borough
When Edinburgh's gane.

The association of Musselburgh with paper-making dates to the early days of the reign of Queen Victoria,

if not before. But the chemicals used by the paper-makers so polluted the waters of the Esk that when proceedings were taken by the riparian proprietors the former were not disposed to carry on.

In 1868 Messrs. Alexander Cowan and Sons

forward with leaps and bounds. To-day, the Inveresk Mills, with four machines, have a working capacity of 180 tons a week, or nearly 10,000 tons a year.

A description in detail of the various chemical and technical processes by whose alchemy esparto grass is transformed into paper would have no interest for the general reader. It is sufficient for all practical purposes to state that after treatment the grass is converted into pulp at one end of a continuous machine, and it emerges at the other end as finished, dried, and what is called "calendered" paper. The paper-machine may with sufficient accuracy be said to resemble a long loom on which there are no shuttles.

At one end the viscous pulp, contained in a vat, which is constantly stirred by a cog-wheel, flows steadily on to a continuous wire gauze, which is kept revolving upon rollers. On this wire gauze the pulp is spread evenly, and as the sheet moves onwards the moisture is gradually drained away, until the thin layer of pulp is transferred to a sheet of felt which travels on endlessly, as the gauze does. The transferring of the half-made paper from the gauze to the felt is effected by two hollow rollers, which are sometimes filled with steam to hasten the drying of the pulp. The paper is then passed to the drying-cylinders proper, and from them to the smoothing-rolls, which obliterate the marks made by the gauze and the felt.

In this condition the paper lacks that finish and smoothness which it obtains by being passed over polished rollers of hard cast iron in the process known as "calendering." To produce "art" paper, as it is called, the paper is

(Continued overleaf.)



MAKING PAPER FOR "THE GREAT EIGHT": THE "WET END" OF THE PAPER-MAKING MACHINE AT AN INVERESK MILL.

In the wooden trough on the left, the bleached pulp can be seen waiting to be mechanically fed into the "wet end" of the machine, and dried on the flat surface at which the nearest operator is standing. It is then compressed by the series of great rollers shown in the background, whence it emerges at the "dry end" as raw paper.

purchased certain mills in which they dealt with esparto grass, and in 1882 they turned out about 63 tons of paper a week. Five years later the business became a private limited company, and it began to go

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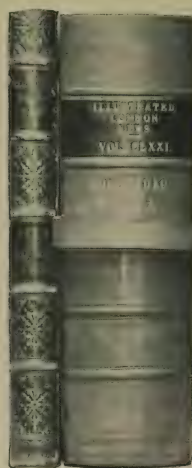
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AN OBJECT-LESSON IN THE GROWTH OF OUR PAPER: THE FIRST BOUND VOLUME OF "THE ILLUSTRATED LONDON NEWS" OF 1842 PLACED BESIDE THAT OF THE SECOND HALF OF 1927—A REMARKABLE CONTRAST IN BULK.

The above photograph shows in an interesting comparison the enormous increase in the bulk of the present "Illustrated London News" over its "ancestor". Vol. I, May-December, 1842—due to the great expansion of the paper in illustrations and reading matter.

Continued.
coated with a special preparation in which china clay is mixed with casein, the product of skim-milk, or glue, thus producing a size. The coated paper is then dried by fans and passes into a chamber some 300 feet in length and heated to a high temperature, where it hangs in a series of enormous graceful festoons in order to dry. When perfectly dried it goes through a process called super-calendering to receive a highly polished surface, and is then rolled on a cylinder to any convenient length in order to be shipped to its destination. Rolls of paper measuring five miles in length are quite common to-day, but for exhibition purposes rolls of paper have been made to a length of fourteen miles.

Large as is the output of the Inveresk Paper Mills, it has necessarily to be supplemented to meet the varied demands of the journals which use it. In seeking such additions the Inveresk Paper Company acquired three years ago the interest of the shareholders in the firm known as Thomas Chalmers and Sons, Ltd., of Linlithgow, although for trading purposes the name is still retained. This mill was one of the first to adopt esparto as the raw material for the making of the news, printing, and writing papers which it produced.

After a fire at the end of the last century the mill was entirely rebuilt and soon became prominent in paper-making circles by being the first to introduce imitation art papers. These immediately became a pronounced success, and produced a large demand from the printing trade on account of the excellent results they gave when used for fine half-tone blocks; and a large proportion of its output is used by "the Great Eight," together with the

paper manufactured for photogravure printing, which is another of Messrs. Chalmers' popular grades.
Four miles away from Messrs. Chalmers' mills are the Westfield Paper Mills, which are also incorporated in the Inveresk Paper Company's activities. Originally started in the last decade of the nineteenth century, on the site of a small mill, it was taken over by Mr. Harrison for the company a couple of months later than the Chalmers mill. Such is the reputation of the highly glazed, snow-white surface of the paper which these mills produce that the illustrated journals and magazines, not only in England, but in many countries overseas, quickly recognised its suitability for the pictorial reproduction of photographs and engravings.
Among other paper-manufacturers who supply the ever-growing needs of the activities of Inveresk House are Messrs. Olive and Partington; Horton Kirby; the Northfleet Paper Company; and the Carrongrove Company.
Messrs. Olive and Partington, Ltd., manufacture various grades of paper at their Turn Lee and Dover Works, Glossop, and at Broughton Bridge Mills, Salford. Paper has been made at Turn Lee Mills for more than a hundred years, and for over fifty years



THE PROCESS OF REELING FINISHED PAPER: THE "DRY END" OF THE PAPER-MAKING MACHINE IN THE MILLS OF THE WESTFIELD PAPER COMPANY, LTD. The vegetable pulp, after being impregnated with various bleaching chemicals, comes to the "wet end" of the long paper-making machine shown above, where it is dried and compressed to the right thickness by rollers, heated internally with steam. When it appears at the "dry end," it is raw paper; but it has still to receive a high polish to become the "art" paper on which "the Great Eight" are all printed.

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of that period under the auspices of Olive and Partington, the firm being privately owned by the late Lord Doverdale (then Mr. Edward Partington) until 1901. In that year it was converted into a limited company, under the title of Olive and Partington, Ltd., and in 1926 it passed under the control of the Inveresk Paper Company, Ltd. The site of the mills was chosen for the pure soft water found in the locality, and because of its proximity to Manchester. The Glossop mills are unique in this country as containing under the same roof the manufacture of wood pulp, of paper, and of coated papers. The fact that the company makes its own wood pulp has important advantages, especially in the matter of strength, cleanliness, and sizing, which tend to higher quality and greater variety of paper. The productions include excellent paper for the printing of high-class process blocks.

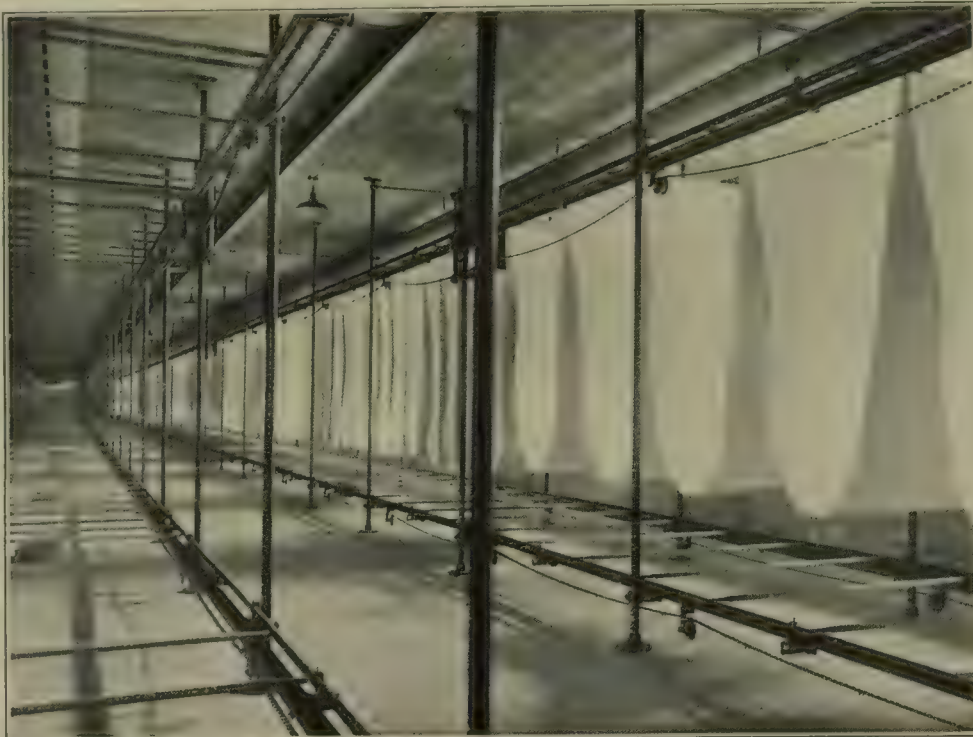
Horton Kirby Paper Mills (1927), Ltd., are a very old-established Kentish concern. Their mills on the banks of the Darent remind one of a well-known advertisement—"Born 1820 (when the mills started) and still going strong"—making the highest grades of esparto printing paper for magazine and book work, also very high-class art paper. In fact, their reputation for making esparto and art papers has more than equalled their competitors in the "Land o' Cakes"—a country justly famed for its esparto and art papers. A great feature of these mills is their very close proximity to London, the centre for the largest consumption of paper in this country. Paper is made and delivered to the customer within a few hours, and in times of stress this is found invaluable. It is also interesting and worthy of note that these mills claim to be the only ones in England turning

out consistently and satisfactorily the very best grade of what is known as "Esparto Water-surfaced Imitation Art" papers, such as those on which the high-class magazines are printed with such wonderful results.

The works of the Carrongrove Company are

The Carrongrove Paper Mill has been in operation for nearly a century. It is, however, only a little more than a quarter of that time since the paper-making industry has made such strides that the mill has become one of the finest and most modernly equipped in all Scotland, which has always been famous for the manufacture of esparto papers. This development is the result of what may be called the Carrongrove slogan of "Quality and Service," with the result that, although the mill produces a wide range and variety of paper, so that the manifold requirements of the publishing and printing trades are perfectly met, their quality is excelled in no part of the country. No fewer than 230 tons of pure esparto paper are produced weekly at the Carrongrove mill.

Another limb of the Inveresk tree is the British Vegetable Parchment Mills, Ltd., situated at Northfleet, Kent, which can lay claim to being the youngest paper-making firm in the country, for they have been running for less than a year. Although vegetable parchment was the invention of an English chemist, its commercial production during the last fifty years had been in the hands of Continental paper-makers, for, as in the case of the aniline dye industry, we allowed this valuable process to drift away from England. As, however, the British dye industry has once more been established in the home of its origin, so British vegetable parchment is again being manufactured in English mills of the most modern type. The company's plant is the largest and most complete of its kind in the world, another proof of the boldness of conception and the thoroughness in carrying out the enterprises with which the name of Inveresk is associated.



ONE OF THE FINAL STAGES IN PAPER-MAKING: PAPER HANGING IN FESTOONS TO DRY AFTER BEING GLAZED AT THE CARRONGROVE PAPER COMPANY'S MILLS, AT DENNY, IN SCOTLAND.

This interesting photograph shows paper almost ready for the printing press, but lacking the final polish, which is given to it by big steel rollers, or "calenders." The festoons of white paper are seen drying off after having received their glazing with casein and other chemicals.

situated on the banks of the River Carron, and as they are within easy reach of the great Scottish ports, Glasgow, Leith, and Grangemouth, their products are easily sent abroad, while they are also able to take full advantage of the rapid development of road transport.

being manufactured in English mills of the most modern type. The company's plant is the largest and most complete of its kind in the world, another proof of the boldness of conception and the thoroughness in carrying out the enterprises with which the name of Inveresk is associated.

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[1928

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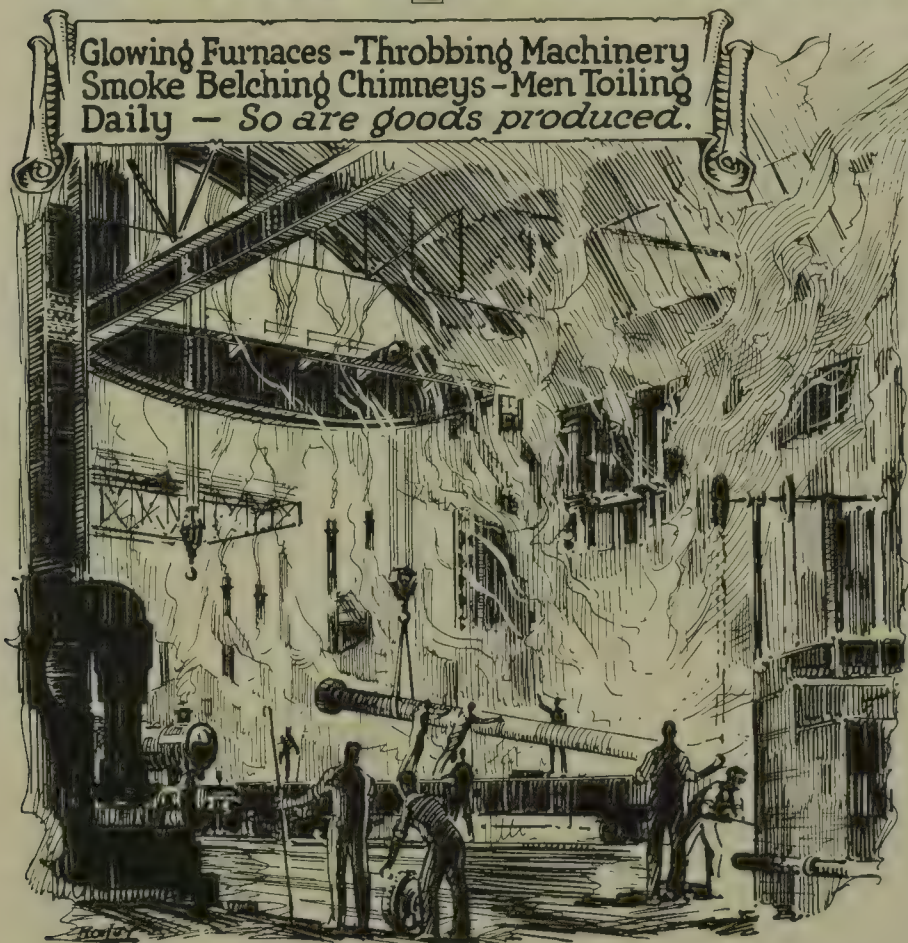
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(This is a good specimen of a fine line-block. Note the detail—the tiniest stroke of the artist's pen is reproduced.)

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THE NICKELOID ELECTROTYPE COMPANY LIMITED
10, NEW STREET HILL, LONDON, E.C. 4. (TELEPHONE NUMBER CENTRAL 9791)



Continued from page xxiii.

in time for the papers to be delivered to the public before breakfast. The speed and accuracy with which this work is done in the early hours of the morning are made possible by an intricate and costly organisation in which a skilled and experienced staff and the specially equipped premises play important parts. Similarly, vast quantities of weekly, monthly, and other periodicals are distributed to retail newsagents, work which is quickened by branch establishments in many districts. Messrs. Horace Marshall and Son's business likewise includes wholesale book-selling and stationery departments, as well as a publishing department for supplying the trade with many well-known periodicals and a variety of books for school use.

Lord Marshall, the present principal of the firm, adds to the conduct of the business an active interest in municipal affairs in the City of London, and in many philanthropic agencies. During "the Peace year," as 1918-19 has been called, he was Lord Mayor of London, and welcomed to the Mansion House and the Guildhall many of the notable people who were prominently identified with the Allied cause. While still in office he was appointed a Privy Councillor, and in 1921 was raised to the Peerage, while recently he succeeded Lord Burnham as President of the Newsvendors' Institution.

World-wide in their operations are the interests of the famous Continental publishing and distributing firm, La Librairie Hachette. Originally, as their name indicates, from France, their operations in that country extend not merely to the distribution of nearly all the French newspapers and publications and the control of the railway station bookstalls, but their

publishing activities are exceptionally wide, for they cover nearly the whole field from the issue of the chief magazines to the publication of a wide range of educational text-books.

From them, in part at all events, France obtains

retail branch in King William Street, while the large series of modern language text-books which they issue is known in practically every English school and wherever modern European languages are taught. The development of wireless has brought into being a new use for Messrs. Hachette's publications, for the foreign language lecturers of the B.B.C. usually employ the firm's books for their lessons by wireless.

Newsagents to the British Empire is an apt description of the firm of Messrs. William Dawson and Sons, Ltd., which from its London offices ships annually periodicals weighing some 8000 tons to the countries over which the Union Jack proudly flies. Magniloquent as is the above title, it does not do Messrs. Dawson justice, for their business reaches out to the remotest corners of the earth where the English language is spoken. The importance of the firm is attested by the fact that H.M. Post Office allows it the privilege of making up postal bags for transmission to India, Canada, Australia, China, and other countries, and they go direct to their destination without being opened.

The influence wielded by the company was demonstrated about 1910, when it took a prominent part in inducing the Post Office to reduce the rate for British weekly and monthly publications to Canada from fourpence to a penny per pound, thus giving preferential consideration to the

Dominion. When, eventually, the price was reduced, the sale of British publications in Canada was multiplied at least a hundred times, and thus added another link to the chain which binds the two countries together.

Again, in 1921, the Government proposed to raise the postal rate of all printed matter going out of

(Continued overleaf.)



THE PROCESS THAT GIVES ART PAPER ITS FINAL GLAZE AND FINISH: A SUPER-CALENDERING MACHINE IN THE INVERESK PAPER MILLS.

When perfectly dried, art paper goes through a final process called super-calendering, to give it a highly polished surface, and is then rolled on to cylinders.

the publications of "the Great Eight." The firm, however, also distributes English newspapers, periodicals, and books throughout the world, and through their wholesale and retail book departments they distribute the literature of the Continent throughout the United Kingdom. A complete display of this Continental literature is always to be found at the firm's



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The illustration shows Pontifex's "Leger" Basin, in white glazed earthenware, with ledge at back of bowl, on which tumbler, shaving brush, etc., can be placed.

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PONTIFEX'S "PERFECTION" series of designs.

Continued.]

England. Messrs. Dawson pointed out to the authorities that, if this course were pursued, they had no alternative but to send their enormous weight of postal packages in bulk to Paris and despatch it from there. In that way the French Government would gain the postage which ours would lose. Such is the magnitude of the firm's business that the proposal was withdrawn.

Their Continental business in the matter of British books alone is so great that the majority of the books sold in every country in Europe have been forwarded thither by Messrs. Dawson. Yet, if a single individual wants a single copy of a given newspaper, the firm willingly supplies it. Indeed, tens of thousands of British subjects living abroad depend for their supply of English news on the papers forwarded to them regularly by Messrs. Dawson and Sons. The firm's overseas trade is, however, only a part of its business, for, in addition to its large wholesale trade done in London, it was the pioneer in opening up provincial branches in various parts of England, and it has within the last twenty years formed subordinate companies in Cape Town, Toronto, and Paris.

Half-a-crown is the traditional sum with which many famous businesses are said to have been started. Only a twelfth of that amount was, however, according to the romantic story, the cash with which Mr. John Speechly Gotch, who, in association with Mr. Gordon, established the famous organisation of Gordon and Gotch, Ltd.,

who are known throughout the Empire as export publishers and advertising agents. It was some three-quarters of a century ago that that partnership was formed. Its development was so rapid that

world. Established first in Holborn in a few rooms near the western end of the Viaduct, it moved early in the 'seventies to St. Bride Street, but additional premises had soon to be established, and, as the business expanded, in 1925 the fine eight-storey building was erected in Farringdon Street and named, after one of the founders, "Gordon House."

Even in three years, however, Gordon House has been outgrown, and an adjacent building has been acquired. The publishing activities of the company are essentially those of an overseas service, and no publishing is done in the British Isles. For the company's needs, however, the most up-to-date devices in the shape of hydraulic presses and electrical transporters are employed to ensure rapid, efficient, and economical packing and despatching of the British publications read abroad, in which, it goes without saying, "the Great Eight" form a notable proportion. In addition to the weekly and monthly periodicals, the firm ships vast quantities of books, paper in bulk, stationery, and fancy goods to all parts of the world.

Side by side with these activities the company has earned a great reputation as the premier overseas advertising service. By the side of this the English advertising department has grown up, and necessitates a staff of artists and writers who supplement the work of the organisation, which has been scientifically planned to carry out smoothly and efficiently the advertising campaigns of its clients.



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Here we see paper being got ready for the all-pervading "ink of civilisation," by sorting and cutting it to convenient shapes. This is the last process in the making of this type of paper. Illustrations and descriptions of the processes by which art paper for "The Illustrated London News" is made from esparto grass will be found on other pages.

a chain of Gordon and Gotch houses, with their associated companies, stretched through the Empire to become an important force in the advertising

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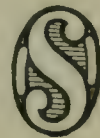
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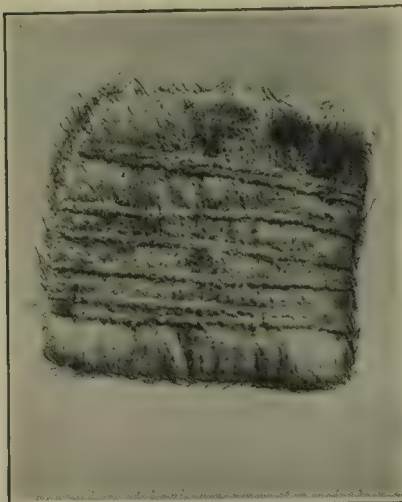
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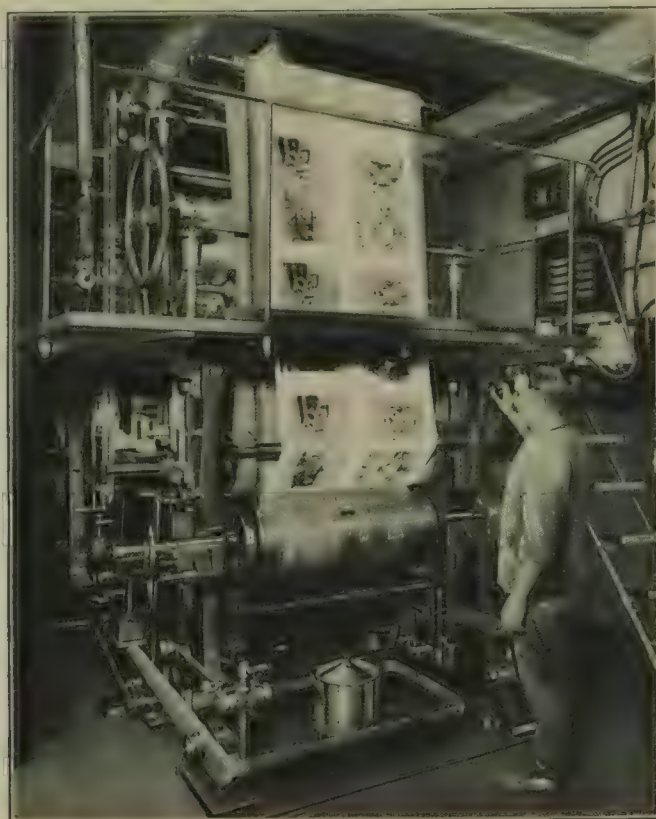
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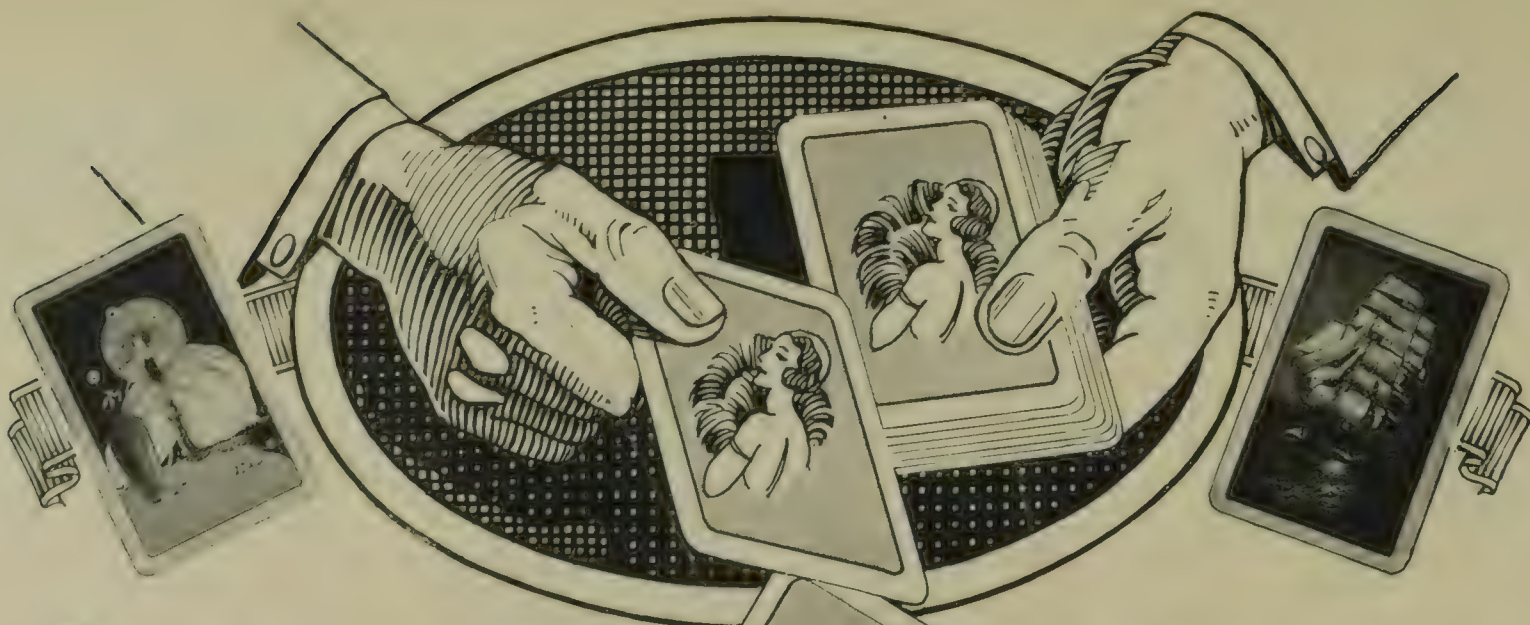
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WHERE STRIKERS USED VIOLENCE: AIR VIEWS OF MELBOURNE.



THE AUSTRALIAN CITY WHERE DISTURBANCES RECENTLY OCCURRED IN CONNECTION WITH THE DOCK STRIKE: A PANORAMIC VIEW OF MELBOURNE FROM THE AIR, SHOWING PRINCES BRIDGE, FLINDERS STREET STATION, AND PART OF THE RAILWAY YARDS BESIDE THE RIVER YARRA, WITH THE CATHEDRAL NEAR THE BRIDGE.



WHERE TRADE UNIONIST DOCKERS ON STRIKE CHASED AND ATTACKED LICENSED VOLUNTEERS, AND THE POLICE HAD TO DRAW THEIR BATONS TO CONTROL THE MOB: MELBOURNE—AN AIR VIEW LOOKING SOUTH, WITH THE RIVER YARRA IN THE DISTANCE, AND GOVERNMENT HOUSE IN THE DOMAIN (NEAR THE TOP RIGHT-HAND CORNER).

The Australian dock strike took a rather more serious turn at Melbourne a few days ago. In a message from that city dated October 1, a "Times" correspondent said: "The unloading and loading of overseas ships by volunteers, of whom 2500 are now licensed, proceeds without a hitch under police protection. The shipping representatives attended the 'picking-up' places to call union gangs to work inter-State ships, announcing that employment would be subject to the provisions of the Transport Workers Act. More than 1000 unionists attended, but when they

heard the terms they angrily declared that they would not be licensed. They dispersed in an orderly manner and went to the Customs House to watch the licensing of volunteers. Many volunteers were chased and attacked by trade unionists after they had taken out their licenses. At times the police had to draw their batons to keep the unruly mobs in order. The disorder was only sporadic, and there was no concerted effort to molest the volunteers. Ten men were arrested, and 20 or 30 were treated at the hospitals for minor injuries."

HAPPENINGS AT HOME AND ABROAD: TOPICALITIES FROM MANY LANDS.



CANADA'S FIRST LEGATION IN FRANCE: THE NEW BUILDING RECENTLY OPENED IN PARIS.

The first Canadian Legation in Paris, at 1, rue François I., was officially opened on October 2 in the presence of the Premier of Canada, Mr. Mackenzie King. It stands in the heart of the Embassy district, close to the French Foreign Office. The first Canadian Minister to France is the Hon. Philippe Roy.



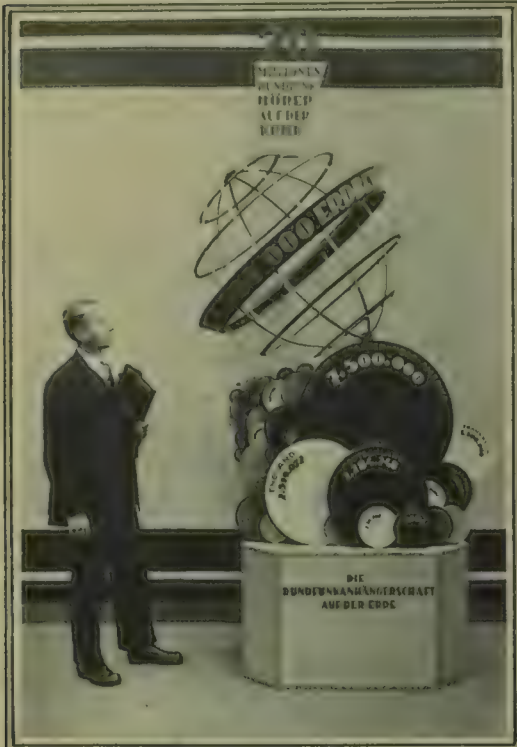
THE JAPANESE ROYAL WEDDING (RECENTLY CELEBRATED): THE BRIDE'S "TROUSSEAU"—A WARDROBE AND HER WEDDING "KIMONO."

The marriage of Prince Chichibu, brother of the Emperor of Japan, and at present Heir-Apparent to the throne, to Miss Setsuko Matsudaira, was celebrated at the Imperial Palace in Tokyo on September 28. The bride wore a five-fold Imperial marriage robe of antique design, fashioned



THE JAPANESE HEIR-APPARENT'S BRIDE IN WESTERN DRESS: MISS SETSUKO MATSUDAIRA (NOW PRINCESS CHICHIBU) WITH GIRL FRIENDS IN NATIVE ATTIRE.

like a kimono and ornamented with embroidery. These robes, shown in the left-hand photograph above, form a striking contrast to her Western dress seen in the other. She is a daughter of Mr. Matsudaira, formerly Japanese Ambassador to the United States, and since designated Ambassador to Great Britain. Portraits of the Royal couple appeared in our last week's issue.



THE WORLD'S WIRELESS "LISTENERS": A STATISTICAL ITEM IN THE GERMAN RADIO SHOW.

This exhibit shows the comparative distribution of "listeners" throughout the world. Discs with figures show that the U.S.A. has 7½ million "listeners"; Britain, 2,519,072; Germany, 2,264,248; France, 1,100,000; and Japan, 500,000.



A SAINT'S SKELETON EXPOSED DURING HIS "OCTAVE": ST. SIMEON IN HIS BEAUTIFUL SILVER SHRINE AT ZARA.

The shrine containing the remains of St. Simeon, the patron saint of Zara, is opened every year during his octave (eight days from October 8), exposing to view the skeleton within. The shrine is of solid silver, beautifully carved, it is said, by a Milanese goldsmith of the fourteenth century.



THE TURKISH PRESIDENT GIVES A BLACKBOARD LESSON ON THE NEW ALPHABET: KEMAL PASHA AS TEACHER.

Ghazi Mustapha Kemal Pasha, the President of Turkey, is here seen giving a lesson on the new Turkish alphabet to village schoolmasters. During a tour in northern Turkey he found the population working hard to learn the new characters.



EXPORTING SCOTTISH RED DEER FOR BREEDING IN NEW ZEALAND: WORK NOW IN SEASON—A STAG BEING SLID UP A PLANK INTO A CRATE FOR TRANSPORT.

The photograph shows an incident in the capture of stags from a Scottish deer forest for transportation abroad—in this case to New Zealand. To facilitate travel, the antlers are sawn off—an operation that causes no pain, as it is done at a season when the antlers are hard. In New Zealand the imported deer have done extraordinarily well.



AN EAGLE AS A PRESENT FOR MUSSOLINI: THE GREAT BIRD IN ITS CAGE CARRIED, PALANQUIN-WISE, BY FASCISTS.

An eagle, which was recently caught in the mountains of the Trentino, has been presented to Signor Mussolini by ex-soldiers of that district. The gift is symbolically appropriate, for there is something aquiline in the Duce's own character, with his soaring idealism and his rapidity of thought and action.

THE CAMERA AS RECORDER: NEWS BY PHOTOGRAPHY.



THE GREAT FLOODS IN KASHMIR: PART OF THE BUND AT SRINAGAR BREACHED BY THE RIVER JHELMUM.



THE THAMES SHOWING SIGNS OF REPEATING LAST JANUARY'S FLOOD: AN ABNORMAL TIDE AT WESTMINSTER.

There was an abnormally high tide on the Thames the other day, which recalled the disastrous flood in January. Our photograph shows the Grosvenor Embankment, strengthened by sandbags. Patrol boats rode high above the pavement level. In the distance is Lambeth Palace and Bridge.



A HINDU TEMPLE PARTLY UNDER WATER: A TYPICAL SCENE DURING THE FLOODS IN KASHMIR LAST MONTH.

The floods in Kashmir at the beginning of September were described as the worst experienced there for twenty-five years. Writing on September 5, when they had begun to subside, a "Times" correspondent said: "Messages from Srinagar state that the water level is falling after being in some places 70 ft. above the normal level. The Bund has been breached in several places, but troops are busy strengthening the weak places. For two days Srinagar has been completely isolated, and all roads have been breached, except the road to Leh. . . . Many important bridges have gone, and at Uri Bridge 200 lorries are held up and one is reported to have fallen over the edge. At Uri over fifty Europeans are stranded, with bridges broken in front and behind, and the roads blocked as well."



WHERE AUSTRALIAN VOLUNTEER DOCK WORKERS WERE ATTACKED BY STRIKERS: ADELAIDE—A GENERAL VIEW OF THE CITY.

On September 27, at Adelaide, nearly 4000 waterside workers stormed the volunteer employment bureau and afterwards drove the volunteers off the steamers where they were working. Later, 2000 strikers marched to Port Adelaide, and there was a clash with the police. On October 1, however, the waterside workers decided, at a mass meeting, to register under the Transport Workers Act, and resume work.



THE PRIME MINISTER RALLIES HIS FOLLOWERS FOR THE COMING ELECTION: MR. BALDWIN SPEAKING IN THE YARMOUTH HIPPODROME.

The first day of the Conservative Conference at Yarmouth—September 27—concluded with a mass meeting at the Hippodrome, where the Prime Minister addressed an audience of nearly 3000 people. He said: "I have never known the Party in better spirits or in finer fighting fettle. They have confidence in themselves; they have confidence in next year."



MODERNIST ARCHITECTURE IN AN ESSEX INDUSTRIAL VILLAGE: A REMARKABLE HOUSE AT SILVER END.

The garden village which has grown up at Silver End, near Witham, in Essex, round one of the Crittall Manufacturing Company's metal window factories, contains some remarkable examples of ultra-modern architecture designed by one of the Company's officials. Most of the inhabitants of the village are war-disabled men employed at the factory.

The World of the Theatre.

By J. T. GREIN.

YVONNE ARNAUD, CHARMEUSE.—IS THE CENSOR TO BLAME?

IF I were asked by a visitor, country-cousin or from abroad, what is the most interesting performance in the World of our Theatre, I would answer: "It is a toss-up between Monckton Hoffs's 'Many Waters,' at the Ambassadors—so far the *facile princeps* of the year—and 'By Candlelight,' with Yvonne Arnaud, Leslie Faber, and Ronald

be considered the peer of our one and only Marie Tempest, I draw no comparison, but I imply a tribute to our own *comédienne*, who has acquired by intuition that which in Miss Arnaud is a dower of birth. Both are the combination of Latin charm and English aristocracy of manner. Whatever Miss Arnaud does is prepossessing; even her impish juggling with

a French accent and awry accentuation never wearies, because it is full of *esprit*. For we know that in ordinary life her English is perfect; if she persists in Frenchifying it with a merry twinkle in her eye, she does so because she knows that people will expect it from her, that it will tell — that people will "eat" it, as the slang term goes. The same applies to her characterisation. In the play the lady who comes to the Baron's flat and mistakes the valet for her hero is in reality the maid of the Baron's *chère amie*.

We do not know, nor guess it at first; yet, as often is the case when people masquerade as their

maid, in the valet's eyes, was absolutely the "real article"; to be favoured by her was the dream of his life; but the master knew better. There is a way a lady moves about, sits down in lounging comfort, says things—even sometimes things not lady-like in words—which are, to the connoisseur, as distinguishable as a real pearl and a counterfeit. There is a lustre in innate refinement which no imitation can attain. The Baron saw it at once; we only saw it when Miss Arnaud wished to lift the blinkers from our eyes—it was the perfection of acting in all it stands for. Again, there were the love-scenes—rather insinuating if played without delicacy of handling; they might either, or all, trespass beyond the bounds of decency, shock the more squeamish in the audience, vulgarise the irony which, *au fond*, is the undercurrent of the whole theme. Played by Miss Arnaud with that *espiglerie*—I can't find an adequate English equivalent—all her own, it never stung nor ruffled; so gentle, so suave, was her touch-and-go manner that we were fascinated beyond words, and innuendo became cajolery. For by her winsome personality, her tactful understanding, her laughing eyes, her witching smile, Yvonne Arnaud is a *charmeuse*—a fairy queen of comedy whose quiver is full of gossamer darts that flit from the stage to the topmost ranks of the audience like gladdening rays of sunshine.

Miss Isabel Jeans, one of the most brilliant among our young actresses, flatly accuses the Censor "of being really responsible for the present deplorable state of affairs in the British theatre. I personally blame," she says, "our censorship, which insists on keeping our stage fit for what it calls 'young people,' and consequently unfit for adults." And then, substantiating her charge by referring to the ban on "Mrs. Warren's Profession" (is it still on the Index?) "La Prisonnière" and "Maya," she makes a suggestion for reform without resorting to the wholesale remedy of abolishing it altogether in the following words—

"I would recommend that all plays should be submitted to the Censor—or better still, to the Bishop of London's Public Morals Council—and that such of them as met with puritan approval should, on production, bear the label: 'Fit for Children'!"

I rubbed my eyes. The Bishop of London as super-Censor is a weird idea, but let it pass; he is a

[Continued on page 630.]



"SUCH MEN ARE DANGEROUS," AT THE DUKE OF YORK'S THEATRE: (LEFT TO RIGHT) MR. MATHESON LANG AS COUNT PAHLEN, MR. ROBERT FARQUHARSON AS THE MAD TSAR, PAUL I., AND MISS ISOBEL ELSOM AS ANNA BARONESS OSTERMANN.

"Such Men Are Dangerous," by Paul Neumann, is the second play about Paul I. of Russia produced in London within a year. Its predecessor was Merejkovsky's "Paul I." The new play is more concerned with the character of Count Pahlen, Governor of St. Petersburg, who plots to dethrone the mad Tsar and place the Tsarevitch Alexander on the throne.

Squire in the main parts." "By Candlelight" is not an English play; nor is it from the German, as many people believe because the original was written in German. It actually comes from Austria, where, as some who know their geography are aware, the same language is spoken as in Berlin, but with such difference of touch and accent as makes the Londoner envious of the Somerset chant. I never looked at my programme, but the very subtlety of the beginning, the *grande tenue* of the valet at the 'phone representing his master, made it clear. This is a typically Viennese situation; in Republican Germany the valets have not that grand-seigneurial polish nor that suavity of accent. Vienna may no longer be the Kaiserstadt of the song, but the Viennese, despite misfortunes and poverty, has remained the unique, amiable optimist who beguiles work by his mellifluous voice and settles bargains, never to be fulfilled to-morrow, with hard-headed business men over a glass of *mélange* coffee and a Kipfel. It was wise and clever of Mr. Harry Graham, the adaptor, that he did not adapt this charming story, which, to a certain extent, is a transcription of Molière's "Précieuses Ridicules." (By the way, the immortal Mascarille might now be played one of these days by Leslie Faber in Edgar Jepson's excellent translation.) Mr. Graham has left the people and the *locale* of the play as they were, but he has modified some lines all too *Wienerisch* which would offend English ears, and he has lowered the temperature of some of the scenes which, in the original, drove the thermometer to withering heights.

But if the adaptation was an example of adaptation, as the play itself is a modern comedy in the most succulent sense of the word, it has as its main interpreters three artists who for finesse and delicacy of touch, could not be surpassed anywhere in the world—not in Vienna; not even in Paris. For, under the comic skins of the master and the valet of Mr. Leslie Faber and Mr. Ronald Squire, there transpired the indescribable manner of the gentleman, the product of British culture which is the cynosure and the envy of men all the world over. And then there was Yvonne Arnaud, French by birth, English by annexation; and if I say of her that henceforth she will

superiors in life, there is a certain *nuance* which marks the border-line between birth and breeding. It is often—think of the *nouveaux riches*!—a mere shade of speech and manner. The man, or the woman, of the world detects it at a glance, but the average person gladly accepts its face value and respects it accordingly. Such an impersonation demands great knowledge of the world, great introspection, and, above all, an artistic intuition which is rare even among artists of quality. The slightest exaggeration rends the veil, when only a corner should be raised. And it is here that Miss Arnaud excels. Unexpectedly she makes a movement or says something which makes us doubt whether this comely, elegant visitor is really a lady—and the more sudden the discovery, the greater the amusement. The



"THE CONSTANT NYMPH" REVIVED AT THE GARRICK THEATRE: "SANGER'S CIRCUS" AT SUPPER—(L. TO R.) TONI (NANCIE PARSONS), PAULINE (MADELEINE CARROLL), TRIGORIN (MORTON SELTEN), LINDA (MARY CLARE), KATE (MARGOT SIEVEKING), SUSAN (RUBY COLE), TESSA (JEAN FORBES-ROBERTSON), LEWIS DODD (RAYMOND MASSEY), JACOB BIRNBAUM (KENNETH KENT), AND ROBERTO (TONY DE LUNGO).

"The Constant Nymph," by Margaret Kennedy and Basil Dean, dramatised from the former's novel of that name, produced two years ago, was recently revived for a short season at the Garrick. Most of the cast are new, including Miss Frances Doble as Florence, Mr. Raymond Massey as Lewis Dodd (originally played by Mr. Noel Coward), and Miss Jean Forbes-Robertson as Tessa. "Sanger's Circus," it will be recalled, is the nickname for an eccentric musician's family.

THE WORLD OF WOMEN: A PAGE OF PERSONALITIES.



MISS M. RUFFELL.
Won the first motor-cycle race for women ever held at Brooklands—the London Ladies' Motor Club Motor-Cycle Race—at a meeting of the Essex Motor Club on September 29. Rode a Grindlay Peerless. Started scratch and won by $\frac{1}{4}$ mile.



THE QUEEN'S VISIT TO LORD AND LADY SOUTHESK: HER MAJESTY WITH THE HOUSE PARTY AT KINNAIRD CASTLE.

From left to right in the group are—(front row) Lady Cynthia Colville, Lady Maud Carnegie, Mariotta Bosanquet (daughter of Lady Kitty Bosanquet, Lord Southesk's eldest daughter), the Earl of Southesk, the Queen, Sacha Carnegie (son of the Hon. Alex. Carnegie, Lord Southesk's second son), the Countess of Southesk, Princess Helena Victoria, the Hon. Mrs. Alex. Carnegie, and Lady Mary Carnegie. (Back row) Sir Lancelot Carnegie, the Hon. G. Chichester, Lord Carnegie, Sir Hew Dalrymple, and Colonel Sir J. Steuart Fotheringham.



MRS. W. B. SCOTT.
Won the Essex ten-lap 'handicap at the Essex Motor Club Meeting at Brooklands by 500 yards at an average speed of 114.23 m.p.h. In one lap reached a speed of 120.88 m.p.h.—a record for a woman driver in a race at Brooklands.



MR. DOUGLAS FAIRBANKS AND MISS MARY PICKFORD—THE FAMOUS FILM STARS—AT PICKFAIR.

Pickfair is named (telescopically) after its owners, Mr. Douglas Fairbanks and his wife (Miss Mary Pickford), and is their home in the Beverly Hills. It was here that they entertained Prince George (or "Lieutenant Windsor") and his fellow officers of H.M.S. "Durban" at a dance.



SIR EDWARD AND LADY GRIGG.

Sir Edward Grigg, Governor of Kenya Colony, and Lady Grigg welcomed the Prince of Wales and the Duke of Gloucester when they landed at Mombasa, from the liner "Malda," on September 28. In the evening they gave a dinner and dance at Government House. The Princes left Mombasa on the 30th.



THE COUNTESS OF PEMBROKE.

The wedding of Viscount Hambleden and Lady Patricia Herbert, only daughter of the Earl and Countess of Pembroke and Montgomery, of Wilton House, Salisbury, took place in Salisbury Cathedral on September 26. It had been originally intended that the ceremony should take place at St. Margaret's, Westminster, but the arrangement was altered owing to the recent death of the bridegroom's father.



THE CHAMPION COUNTY IN WOMEN'S GOLF: THE CHESHIRE TEAM.

In the Ladies' County Championship Golf Tournament, ended at Walton Heath on September 29, Cheshire won, for the fourth time in the history of the event. Those seen in our group are—Mrs. Raymond Cooper, Mrs. Shand, Mrs. Bridgford, Mrs. Hardicker, Mrs. Stanley Smith, Mrs. Clement, Mrs. Temple Dobell (who took part in all the four victories), and Mrs. Allan Macbeth.



VISCOUNT HAMBLEDEN AND HIS BRIDE (LADY PATRICIA HERBERT).



DOES anyone read T. L. Peacock nowadays? You will find in his books much beauty, considerable learning (he is obliging enough to provide his readers with a translation of his very apposite Greek and Welsh quotations), and a pawky humour which sometimes rises to genuine satire. I have just been renewing acquaintance with "Crochet Castle" and that engagingly whole-hearted collector, Mr. Chainmail, whose admiration for the twelfth century was so sincere that he had "a large hall, adorned with rusty pikes, shields, helmets, swords, and tattered banners, and furnished with yew-tree chairs, and two long, old, worm-eaten oak tables, where he dines with all his household, after the fashion of his favourite age."

But though a man of one idea, Mr. Chainmail has our respect—even our affection: not so another minor immortal, the vulgar snob *par excellence*, Mr. Marmaduke Muleygrubs, of Cockolorum Hall, in "Handley Cross." When Mr. Jorrocks, M.F.H., came to stay the night, he pushed open the door, and this was what he saw. "The hall was fitted up in the baronial style. Above a spacious mantelpiece branched an enormous stag's head, hung round with pistols, swords, cutlasses, and warlike weapons of various kinds, and the walls were covered with grim-visaged warriors, knights in armour, and ladies of bygone days. Many had their names painted in white at the bottom of the pictures, or done in black on the various patterned frames: there were Sir Martin Muleygrubs and Dame Juliana Muleygrubs, and Darius Muleygrubs, and Erasmus Muleygrubs, and Memnon Muleygrubs, and Pericles Muleygrubs, and Demosthenes Muleygrubs, and John Thomas Muleygrubs. "Such a lot of staymakers!" as Mr. Jorrocks observed."

I am told the business of ancestor-providing has fallen on evil days—the very new rich indulge in other follies instead—but I am still open to wager that many a third-rate eighteenth-century portrait bought a year or two ago at Christie's now adorns the drawing-room of a big house in the Middle West, and is referred to as "my husband's great-great-grandmother, my dear, by Gainsborough."

But come, let us deal with people of culture, who buy fine things because they are beautiful. Read Benvenuto Cellini's memoirs and feel something of the enthusiasm of Roman society in the sixteenth century. Nothing comes amiss to these avid collectors—Greek marbles, Roman bronzes, every precious stone under the sun, whether worked by contemporary or ancient artists; books, illuminated manuscripts, miniatures, faience, stuffs and embroideries—a vast

A PAGE FOR COLLECTORS: FASHIONS IN COLLECTING.

and luxurious pyramid of learning and art that our more specialised age can scarcely conceive. Thus the bishop orders his tomb in St. Praxed's Church—

Did I say basalt for my slab, sons? Black—
'Twas ever antique black I meant! How else
Shall ye contrast my frieze to come beneath?
The bas-relief in bronze ye promised me,
Those Pans and Nymphs ye wot of, and perchance
Some tripod, thrysus, with a vase or so,
The Saviour at his sermon on the mount,
Saint Praxed in a glory, and one Pan
Ready to twitch the Nymph's last garment off.

And have I not St. Praxed's ear to pray
Houses for ye, and brown Greek manuscripts,
And mistresses with great smooth marbly limbs?
—That's if ye carve my epitaph aright,
Choice Latin, picked phrase . . .

There is no pernicky narrowness here—nor in seventeenth-century Antwerp if we may judge by the

than in the world of feminine frivolities. After all, the mode, as understood by Paris, is settled by a few people of taste. It is logical that, as authentic paintings by Titian become scarcer, collectors should pay bigger and bigger prices for his drawings, and that the last twenty-five years of railway construction and excavation in China should result in a tremendous interest in early pottery and bronzes. But who ordained that ten years ago everyone should be buying portraits by Lely and Kneller, whereas to-day the market demands the eighteenth century? And why have sporting pictures increased five times in price in five years? A century ago connoisseurs bought canvases by Claude and Poussin, covered them in thick brown varnish, and went into ecstasies; to-day neither of these really significant painters has recovered from this orgy of overpraise. In the 'nineties dealers searched for oak clocks—then for mahogany, and now for grandfathers. By the time these words are printed grandfather clocks—apart from exceptional examples—may be out of

favour for six months on end. Where ten people bought walnut five years ago, a hundred are looking for it to-day. With very ordinary luck you could have bought a superb Primitive for £5 between 1880 and 1890, and a little Meissonnier would have cost you several thousands. To-day the Primitive will cost you two, three, four thousand pounds, and the Meissonnier—well, you won't dream of buying a Meissonnier.

Lacquer is out of fashion. What is the reason? Are we becoming so austere in our taste? But lacquer—the real thing—is as sober as possible, provided you don't spoil it by a gilded stand, late seventeenth century, which is what we have all done since the time of Charles II. Place your cabinet on a severe base of pear-wood—no, no ornament is necessary—and then

you will begin to understand why the Chinese connoisseur has looked upon us as vulgar if comic barbarians for so long.

On the whole, I suppose one can say that the very great works of art do not depend upon fashion; they merely rise in price, and the fortunate owner can contemplate his Velasquez or his Della Robbia, with considerably greater confidence than he can his other investments. It is the fine, but lesser, things that vary in value. I listened to a man a day or two ago lamenting that he had not bought Chippendale in his youth. "If I'd only spent £2000 then on chairs!" he said. "How blind I was!"

"And why didn't you back Felstead for the Derby?" said I. "Because neither you, nor anyone else, knew what was going to happen." The moral of which is, I suppose, never gamble, but buy the quiet, good things rather than the flamboyant; then, if your taste is reasonably cultivated, you will enjoy your possessions while you are alive, and your heirs will not have to worry about death duties afterwards.



"A COLLECTOR'S CABINET," BY FRANS FRANCKEN: A SEVENTEENTH-CENTURY DUTCH PAINTING (NOW IN THE POSSESSION OF THE DUKE OF NORTHUMBERLAND) REPRESENTING A COLLECTION OF ART AND CURIOS "THOROUGHLY TYPICAL OF THE TASTE OF THE TIME."

As noted in the accompanying article, where the details of the above painting are described, the picture in the centre at the top is a "Nativity" by Lucas van Leyden (1494–1533), who was also known as Lucas Jacobsz. He has been called "the patriarch of the Dutch school," and was a friend of Albrecht Dürer.

illustration given above. This picture, from the Duke of Northumberland's collection, is by Frans Francken. One can distinguish a Nativity by Lucas van Leyden (this Nativity, by the way, turned up some years ago, and was presented to the Louvre); two drawings with the monogram of Aldegrevers, miniatures, coins, a book of hours with superb illuminations, letters and seals, two statuettes, one ivory the other bronze; Græco-Roman sculpture, jewellery of various kinds, a butterfly, and sea-shells.

It is an extremely interesting little collection, and thoroughly typical of the taste of the time. To-day, the butterfly and shells would doubtless be relegated to the Natural History Museum—or are there still people whose appetite is omnivorous? What a rebel Rembrandt must have seemed in the eyes of the owner of this cabinet! I can almost hear him denouncing the great Dutchman as I have heard some of my contemporaries denounce the French Impressionists.

I sometimes think that fashion in the world of collecting is more fickle, and less easily understood,



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Where Life Lives on Life: In East Africa.

BEING AN APPRECIATION OF "GORILLA." By BEN BURBRIDGE.*

(PUBLISHED BY GEORGE G. HARRAP.)

IN a moving picture, Mr. Ben Burbridge has "the story of 'The Gorilla Hunt' written in emulsion." In this his book he has it set down in printer's ink. The film, we may presume, presents "the ape-man of Africa" as unchallenged star. The narrative features not only "Great Master," *Bula Matadi*, and his wild and woolly kindred, but rivals—not of the same magnitude, perhaps, but still rivals.

To tell the truth, the gorilla is late upon the screen. Not until the fourteenth "episode" does he crash into view, drumming upon his chest, playing a tattoo



"A LARGE MAN-LIKE CREATURE COVERED WITH COARSE HAIR": A GREAT GORILLA.

upon his chin, slapping his drawn cheeks, rattling his teeth: a fine figure for a "talkie"! To herald him—possibly, to emphasise his "humanity"—are the untamed creatures that hunt and are hunted where "life lives on life" in British East of all the climates and in the "jet corridors" of the Congo jungle.

Consider them as they come. The outlawed lion crying of the savage soul of the Dark Continent ("Tumbo, Simba"—"How do you do, Lion?"), letting his scent drift down upon the herds to frighten them towards his ambushed fellows, springing upon his prey and breaking its neck with a backward jerk of paw-clawing on muzzle, while the jackal and the hyæna slink to lick the dish and the vulture hovers to pick the bones.

The elephant, with tracks like "the impression of a sawed-off tree-trunk pressed gently in the earth," and the "finger" of its trunk-tip pointing to the foe; the family-man elephant and the recluse bulls; the ivoryed misanthropes; fond mothers and romping calves: "Glimpses here and there of the great beasts feeding or moving like shadows through the darkened wood, a flitting ear or gleaming tusk alone catching the eye, that vainly sought, despite the enormous size of the beast, to work out each individual outline. Their quietude of movement—a twelve-ounce kitten could not tread more gently or make less noise—the rhythm of their motion, never hurrying, never lagging."

The rhinoceros, misleading with imitative "nasal explosions," the "evil swordsman of the hills," a d'Artagnan in attack, heedless of numbers, his slim head in snake-like motion as he tests the air for enemies, a silent traveller guarded by signal birds who feed less on the ticks and other infesting insects than upon the blood exuding from the holes they puncture in his hide.

The buffalo, now classed as dangerous vermin, an intrepid fighter when aroused; the hippopotamus and the crocodile; baboons, kongoni, zebra, impala, tommy, the dikdik (an antelope no larger than a hare), wildebeest, Grants, giraffes, stately elands, topy, wart-hogs, leopards, cheetahs, "birds of song and birds of silence . . . birds of gigantic stature, as the ostrich, and birds as diminutive as his eye," the honey-bird that guides to the hive, snakes sinister and deadly—all are there, outside the ring of guardian fires.

And with them are natives more approachable, but as much a part of the primitive as they—spidery, superior Masai who abstain from all work save that of warriors; stalwart, panicky porters and variable gun-boys; the secret cannibals of "the vast fever-ridden, mosquito-haunted forests of the equatorial Congo"; the four-foot pygmies, the Wambute, each warrior with bow and poisoned arrows, and, strapped to the left wrist, "the pouch of death" containing the fatal drug brewed from a berry and smeared upon his weapons.

Lights; but lesser lights! Enter the gorilla, "remarkably individualized," the "ape-man" whose "inconsistencies of behaviour appear to defy standardization." Mr. Burbridge sought him not to shoot him, but to capture him and photograph him. Much labour went to the undertaking; many a hazard. "Far up the picturesque Congo River, and back in an air line across hundreds of miles of Equatorial forests, arise almost in the centre of Africa the snow-covered heights of the ancient volcanoes Mikeno, Karissimbi, and Visoke. These grim old sentinels, in altitudes above fourteen thousand feet, stand in a triangle and form a guard of honour to the four-hundred-odd square miles that the gorilla (*Gorilla beringeri*) claims for his kingdom. To the north and east these mountains look from their perpetual wreaths of storm-clouds on undulations lifting toward sister peaks of the Virunga range, and south-west toward Lake Kivu, a brilliant gem of liquid sunlight discovered by Count von Götzen. Westward they gaze across a vast rotunda of jungle-grown lava fields, towards the ever-changing fires of Mount Namlagira.

"Lake Kivu and its surroundings, at an altitude of ten thousand feet, has a touch of chill which is healthful and exhilarating, but, once ascent of the mountain slopes is begun, there is a sudden change as the trees of the forest shut out the sunlight. As the traveller toils upward a fog-ridden gloom takes possession of the forest. Storm clouds hover above, and a penetrating cold pervades the rain-soaked vegetation. Farther along unnumbered hardships lie in wait. It is because of these, and the remoteness of this region from civilisation, that the mountain gorilla has long been practically free from disturbance. Here on the ancient volcanoes they have raised large families unmolested."

"Unnumbered hardships lie in wait." The believer in Du Chaillu encountered his quota of them, a generous quota. The dark depression saturated the trackers as they hacked and cut their passage through the clutching growths, stumbling over boulders and the trunks of fallen trees, lashed by rain and stung by nettles, crawling through cane-brake, crushing through thicket, squelching along on hands and knees; disappointment damped them as they searched and searched in vain.

But the result was Triumph. Pluck and luck, and the knack of the lure had Victory in their train—much familiarity with the gorilla in his home, and eight live specimens.

Several questioned statements were proved. *Gorilla beringeri* not only roars and thuds against his breast, but bids "defiance as old as Africa" in other ways. Mr. Burbridge records: "Then something happened, something I had never seen before. It is the first time, to my knowledge, that such doings have been chronicled of the gorilla. Often had I heard accompanying the muffled drum of a gorilla beating his chest in the forest, another, metallic and penetrating, like that a small boy makes when he beats with sticks upon a tin can. Until now I had supposed this sound was produced by a small gorilla beating its chest. Usually there are about sixteen beats, then a pause. A gorilla stands upright, man-like, when producing these sounds. My gorilla . . . suddenly demonstrated. He arose in plain view, mouth open, cheeks drawn taut, and beat a rapid tattoo on each cheek with his open palms. The sound was metallic and far-carrying. Another gorilla, like a jack-in-the-box, popped up into an adjacent opening, and drummed on his chin with a rapid circular motion, striking the chin with the backs of his fingers. Often before I had heard this teeth-rattling

without seeing the performer. Whether it was a signal or a note of defiance is a matter of conjecture."

As to certain habits: "The gorilla, though passing most of his life on the ground, may be decidedly arboreal when it pleases him." "I learned much about gorillas," the writer recalls. "Each band, females and young, presided over usually by a single adult male, lived in its own particular portion of the forest, which was rarely invaded by other bands. . . . That the adult male gorillas fight to a finish for mastery of the harem there is small doubt. The lone trails we often saw of single male gorillas through the mountains testified to many enforced bachelor-hoods.

"The camps of the gorillas, occupied only for the space of a night, consisted of large bird-nest-like couches upon the ground, built with some care from the grasses and twigs of adjacent shrubbery. But no attention was paid to protection from the icy blasts of rain. Rarely they housed in the hollow openings of trees. On still rarer occasions, while the adult male slept on the ground, the mothers with their young built huge nests in the tallest trees. At such times the reason was evident, for a careful search disclosed the trail of prowling leopards, who, not daring to attack an adult gorilla, snatch one of their young when occasion allows."

So to ensnaring—the chief end of the one-man expeditions. Mr. Burbridge, as has been remarked, made eight very unwilling, very truculent prisoners during his two trips by permission of the Belgian Government: youngsters "woolly as black bears," and tipping the scale at from thirty-five to sixty pounds, and *Bula Matadi*, who weighed a hundred and twenty-six pounds. He was taken by hand, biting and fighting fiendishly and entangled in a sack. Thereafter, his fury seldom abated, although he grew in caution; and when he died it was in unrelenting hostility, without a moan, with his teeth fast-locked: "A month after his capture an army of marching ants stung him to death one night in camp."

Of the other specimens but two survived for transportation: the one, according to contract, to the Antwerp "Zoo"; Miss Congo, the other, to the United States, there to provide raw material for Dr. Robert M. Yerkes's "The Mind of a Gorilla," by tackling problems in fashion accepted as proving that "evidences of psycho-physiological processes in the gorilla are abundant and varied," that it "seems probable that the animal experiences insight." Which is well enough.

The major interest attaches, however, to Mr. Burbridge's personal endeavours and adventures, his



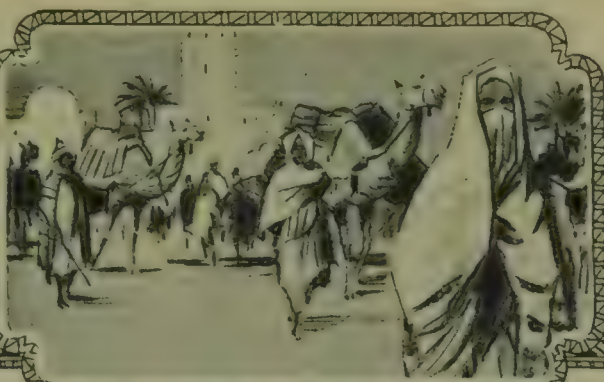
A HAND OF THE GREAT GORILLA COMPARED WITH THE HAND OF AN ADULT NATIVE.

Photographs Reproduced from "Gorilla: Tracking and Capturing the Ape-Man of Africa." By Ben Burbridge. By Courtesy of the Publishers, Messrs. Harrap.

decoyings and his observations, his battlings with Nature, the wonder that is still upon him, his fastings in hours of discouragement, his feastings in those moments of intense excitement which are "the bread and wine of a hunter's life." "I had taken a shower-bath in those few seconds," he writes of a bout with Death. Indeed, he had more than one—but the reaction, the after-glow, was worth the unasked douching! "It is a fatalistic belief among the Arabs that it is needless to run from one's fate on two days—the appointed and the unappointed day."

A volume of unusual attraction, this; few will be able to resist its power. E. H. G.

* "Gorilla: Tracking and Capturing the Ape-Man of Africa." By Ben Burbridge. Illustrated from Photographs. (Messrs. George G. Harrap and Co.; 20s. 6d. net.)



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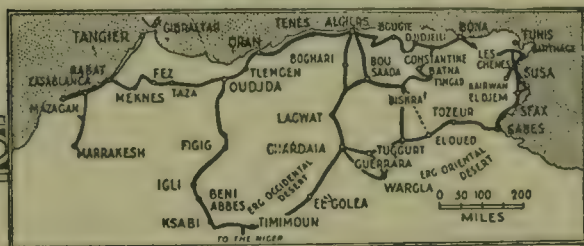
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hands; one is generally a deck-hand, and the other combines the duties of cook, valet, and engineer. It requires very little knowledge on the part of the owner or his guests to eliminate both these men, in which case this space can be fitted up as an additional cabin. Next to the fo'c'sle is the owner's cabin. It calls for no comment at the moment, as I shall have something to say to his wife on cabin decorations and fittings in a subsequent article. Aft the owner's cabin comes the engine-room and bathroom. For fear of frightening anyone at this early stage, I instal in the former a couple of ordinary paraffin engines. They are started on petrol, and operate in a similar manner to a car engine until they are "warmed up," after which a turn of a cock substitutes paraffin for petrol, and thereby saves expense. Heavy oil engines of the Diesel type are frequently fitted in a boat of this size, and have many points to recommend them.

I shall devote considerable space later to the engine question, so for the present it must be taken for granted that this vessel has either one engine which develops 100 h.p., or two engines of 50 h.p. each. Personally, I favour the latter. It will be noted that I instal a separate electric-light plant. It is a luxury, of course, but almost a necessity. A dynamo can be driven off the main engine, as in a car; but as long periods are spent in the boat when at rest, which result in a heavy drain on the lighting battery, the separate plant saves the bother and expense of running the main engine for "charging up." The bath-room explains itself, but for the benefit of the novice, I had better say that hot, fresh-water baths can be provided. By mounting three steps and passing through a water-tight doorway, the cock-pit is reached. It forms the social hall of the ship.

Now in all well-designed motor-cruisers, the helmsman controls the engines as in a car; in other words, the clutch and throttle levers are led up to the wheel position, which has the instrument board in front. It will be seen that this practice is adopted in this case, so that the cock-pit becomes the hub of the ship. For the benefit of the novice, I must state that there are few occupations more satisfying than handling such a vessel single-handed, seated comfortably amongst one's friends in the cock-pit. Ladies with no previous knowledge need have no fears of the task, but I advise the ignoramus to obtain a few "driving lessons" before venturing on a cruise without professional help. There are various schools for this purpose, which include in their courses instruction on the "etiquette of the sea," which, I regret to say, has been sadly lacking amongst certain newcomers during the past summer.

Under the cock-pit are the water and fuel tanks. Some designers put the engines in this position, but I prefer them in a more accessible place,



AIX-LES-BAINS AS A GOLFER'S PARADISE: A FOURSOME OF WELL-KNOWN PLAYERS ON THE LINKS.

The golf-course at Aix-les-Bains contributes not a little to its great popularity as a holiday resort. The four players seen above are (from left to right): MM. Golias, J. B. Loth (winner of the President's Cup), and the two famous English professionals, Havers and Duncan.

"under the bonnet" rather than "under the driver's seat." A few steps down from the cock-pit is the saloon, with the pantry and cooking galley at its far end. I will leave it for the consideration of the ladies for the present. They will wonder why I appear to have omitted a stove for winter cruising; but I have not, as I rely on the owner of this luxury boat to instal a generating plant which is large enough to supply electric radiators. In the pantry will be found a cold-storage machine, which I find is a wonderful saver of labour in the form of extra catering trips, and thereby provides the male element of the party with more peace.

Aft the pantry and galley is a double-berth guests' cabin. I have been tempted to make a doorway to the deck at its after end, but decided in favour of the dressing-table instead. Behind this cabin is a small store, which is entered from above, and this completes the accommodation below decks. The main tanks are in the bottom of the ship, so every drop of water required must be pumped up. If a gravity tank is fitted, and kept filled by a small pump worked off the electric-light engine, a running water supply can be obtained for all needs. I often wonder whether it would not be possible to fit a form of Autovae to keep this tank automatically filled, and I mention the matter in the hope that some inventor will consider it.

I have shown a dinghy on deck because it is most useful for picnics and catering purposes, especially when fitted with an outboard motor. Now, the cost of this vessel complete down to the last tea-spoon will depend on the way she is fitted, the kind of wood of which she is built, and the engines fitted, but, broadly speaking, it will be between £2000 and £5000. If the engines develop 100 h.p., her fuel bill, at twelve knots' speed, will be about 10s. per hour, and wages for two men £6 per week. Insurance varies according to whether the boat is cruising or in harbour, but, roughly, it is 55s. per cent. per annum. Harbour dues depend on the locality, but are not great. The life of the vessel, if well built and looked after, is the same as that of the average human being, and she depreciates at about the same rate.

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G. HAMPDEN.



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HOMICIDES AND THE LABORATORY EXPERTS.

(Continued from Page 594.)

Vaughan. With incredible audacity Armand Peltzer, when he learned of his brother's oversight, went to the room of the tragedy and placed the dead man in the chair. But he made two slips. A footprint was found in the pool of blood on the carpet, made when it had already congealed, and a line of blood had dried from the chin to the occiput instead of downwards to the breast, as it would have done had the man been shot whilst seated. This proved that someone had entered later and moved the body. This forgotten detail brought about the arrest of the cunning criminals.

It is sometimes necessary, when bloodstains of doubtful origin are found, to determine whether the blood is human. Where speed is essential, the iodine reactant due to Strzyzowski is excellent. A particle of dry blood is placed on a microscope slide and covered by a slip of glass. A few drops of the following solution—

Glacial acetic acid	-	-	1.C.C.
Dist. water	-	-	1.C.C.
Alcohol	-	-	1.C.C.
Iodhydric acid (density 1.5)	3	to 5	drops

are made to penetrate at the edge of the slides by capillary attraction. The solution spreads between the slips and dissolves the blood. The glass is heated by means of a tiny Bunsen flame until the liquid boils and the evaporation of the reactant compensated. Within ten seconds crystals of Hematine-iodide will form—these are dark brown, and clearly discernible under a good microscope. Such minute particles as 0.000.005 of a gramme of blood will produce perfect crystals. Peroxide of hydrogen will froth in contact with blood, since oxygen is liberated; but, to be absolutely certain that the blood is human, only the serum obtained from rabbits inoculated with human blood can be depended upon. It has been noted that, if every three days two cubic centimetres of human blood are injected hypodermically into a rabbit in five consecutive injections, and the animal is then allowed to remain in a normal state for three weeks, blood taken from its carotid has developed the properties of serum. The serum is preserved in sterilised glass bulbs. It at once precipitates human blood, and only human blood, even

when the quantity is so minute that no other reactant will be efficacious. Furthermore, the precipitate is infinitely more abundant with the blood of the individual used for inoculating the animal than with any other. This method has to-day superseded all former reactants.

Frequently the victim of an aggression is bound with ropes to prevent a struggle. Everyone knows how characteristic knots can be, and in numerous instances the manner in which the rope was knotted by the assassin has brought about his capture. Knots of every land and every profession have been classified. The frayed or cut end of the rope is always photographed also, for by adapting the two ends it can be proved that it came from a coil or a piece on the premises or in the possession of the presumed criminal.

Burnt or charred documents and letters are the next care of the investigator after a crime. The fragile flakes are withdrawn from stove or fire-place by fanning. When the draught lifts them, a sheet of glass covered with fresh collodion varnish is pushed with infinite caution beneath the fragments and a second piece of glass placed over them. They are then photographed, whereupon the writing becomes visible in white on a grey-black ground. Many a criminal who imagined he had utterly destroyed a letter which might set the police on his track has thus been captured. The ashes in a fire-place are always analysed, for numerous and multi-form are the objects believed to have been annihilated by fire.

The time at which the crime was committed is ascertained by many methods. One of the most striking, because comprehensible to a jury, was demonstrated lately. It had been ascertained that on a certain day the victim had been to a barber for a shave. When found murdered a week later, his stubble of beard measured two millimetres. Experience has shown that a beard, when constantly shaved, grows at the rate of $\frac{1}{2}$ m/m per twenty-four hours in an adult. Therefore the murdered man had been killed four days after the shave, and the alibi of the accused, which reposed on the presumption that the murder was committed on the day the victim visited the barber, became useless. The popular belief that hair grows after death is a myth. Hair ceases to grow when no longer nourished by oxygenated blood.

Hairs from various parts of the body have played their part in bringing criminals to book. They are so minute that no murderer would stop to search for them—but under the micro-camera they become gigantic witnesses. The traces to be found on the scene of a crime are incredibly varied, and so are the objects which a criminal forgets to destroy, as a queer example may show. A woman had been strangled. In the pocket of a man arrested the same day was a handkerchief which bore such characteristic creases that there could be no doubt it had been violently twisted around a human neck, and the jury convicted him upon this evidence.

In the last few years the attention of the experts has been directed to the importance of dust. The clothes of a murdered person are first minutely examined, since the dust on them may be from the malefactor, or, if the body has been moved, from the premises where the tragedy was enacted. Then, when lenses and microscope have done their work, the victim's clothes are placed in a linen bag lined with glazed paper and beaten. Sometimes a vacuum cleaner is used. The dust thus obtained is then analysed. A similar process is applied to the clothes of a suspect. In addition to this his nails are carefully cleaned, for often dried blood or hairs from the victim have been found under finger-nails. But the principal spot where characteristic, although microscopic, particles of dust are always found, even after a hot bath, is in the wax of the ear (Fig. 1, page 594). The following are typical examples of such particles, which in each instance led to the capture of a criminal: tiny severed hairs in the case of a barber; fragments of burnt coffee; tea dust in the case of a woman murdered in a warehouse where this was packed; coal dust, metallic fragments, sawdust, and plaster. The cerumen is extracted from the ear and examined by means of the micro-camera, spectograph, and chemical analysis, or the ultra-violet rays. There was a case not long ago when a body was found in a garden. The man arrested on suspicion twenty-four hours later had under the lapel of his jacket several spores from a plant which grew in the garden where the murder had been committed, but was of a kind rarely seen in France. When an enlarged photograph of these spores was shown to the man he broke down and confessed.



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SUNBEAM

THE CHRONICLE OF THE CAR.

THE NEED FOR BETTER "VISIBILITY"—THE HUPMOBILE.

THERE are any number of things to which we shall all look forward in the coming Show with more than usual interest. There are the still



THINGS NEW AND OLD IN ESSEX: THE LATEST CROSSLEY CAR, A 15.7 "SIX," AND A WIRELESS MAST (ALBEIT OF RUSTIC MAKE) BESIDE AN ANCIENT COTTAGE AT SEWARD'S END.

cheaper light "sixes" and straight "eights." There are stories of wonderful gear-boxes which change speed automatically, and still more wonderful stories of the latest kind of bodywork. It is undoubtedly going to be a very interesting Show for everyone, whether their taste lies in the direction of super-upholstery or super-chargers. I do not think it likely that anyone will be able to say, when it is all over, that it has been, on the whole, a dull exhibition.

The Useless Divided Screen. There is one particular thing for which I shall look with eagerness, and that is improved visibility, especially in closed cars. A modern saloon, especially a small one, is really rather a wonderful piece of work now, not only in its lightness and

freedom from rattle, but in the quite extraordinarily ingenious manner in which it carries its usually excessive load. It is very seldom that one comes across any saloon, except in the baby class, which is really cramped, yet these, and, to a lesser degree, some of the open types of cars, suffer from indifferent visibility—to borrow that quite inappropriate word from the air. The fashion of the divided screen is dying only a very slow death, and I hope that the cars for 1929 will adopt the far more sensible and safer single panel, whether hinged or not. This type gives very much better ventilation, especially if it is hinged at the top, and allows the air to sweep in without any accompanying rain or snow, and without setting up a draught. The divided screen is at best a makeshift affair, and can at worst provide a very disagreeable black line across the driver's line of vision.

Dazzle Dangers from Vertical Screens.

I should like to see more trouble taken to eliminate the blind spots created by the forward pillars in saloons and the side members of the screen frame in open cars. Some are very much worse sinners than others in this respect, but all, I think, are capable of considerable improvement. Moreover, I am

a strong believer in the permanently sloped screen. In the far-off, uncrowded days of the open road a perpendicular screen served its purpose well enough; but to-day, with the hundreds of thousands of cars in use, it has become a positive danger at night, or, as I found out the other day, even in the afternoon when the sun is shining. It can set up an absolutely blinding reflection from sunshine as well as from the beams of following lamps. If the screen were only slightly sloped the trouble would be completely removed. In the case of saloons there would be no necessity for the back blind without which, at present, the average driver is absolutely helpless in a crowd of cars at night. Another point in closed cars which I hope to see radically altered is the lack of vision in the four-window saloon, due to the area blacked out by the

solid corners. These blacked areas make it an extremely risky proceeding to reverse the car, except in very familiar places; and even then it is very easy to miscalculate your position by a fatal inch or so.

The New Hupmobile "Eight."

America is sending us over some very interesting cars this year, a number of which I have recently been trying. The last one I had out was the new "Century" straight-eight Hupmobile, a car which, at the price of £675

[Continued overleaf.]

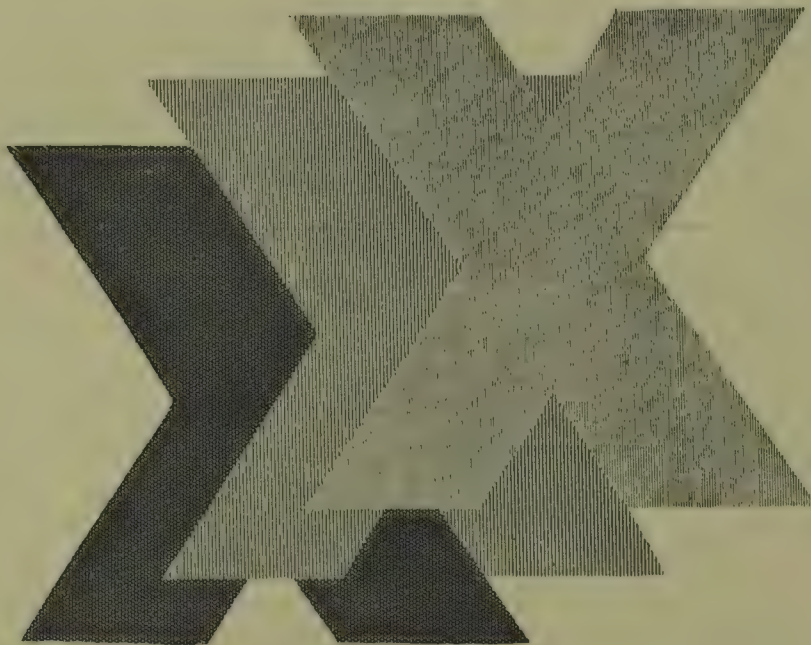


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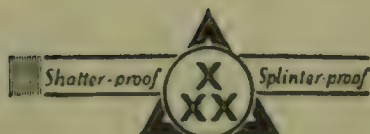
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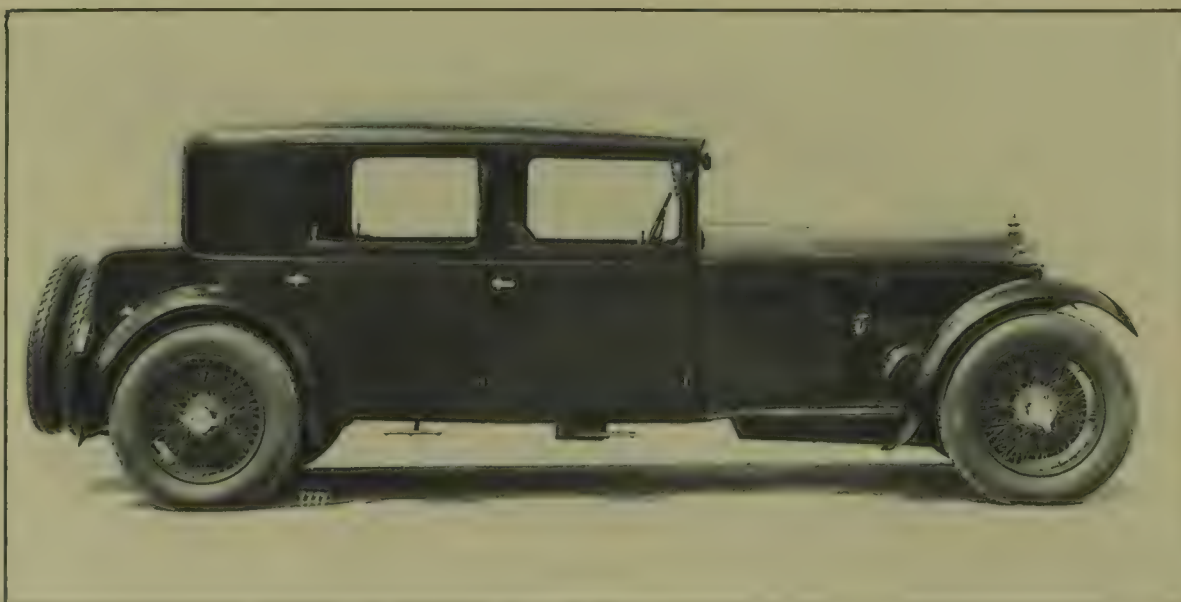
**OLYMPIA
STAND N°
38**

(Continued.)

for the four-door saloon, certainly deserves a place in my list of moderate-priced luxury cars which I have been compiling this year. There is nothing particular to distinguish the design and construction of the Hupmobile from its immediate competitors, most things being built on quite orthodox American lines, but it has certain qualities of its own which I found decidedly attractive. One of these, which I noticed immediately, was the really steady steering at high speeds. This is a feature which I have not always been lucky enough to discover in really fast American cars shod with the enormous tyres they affect. The Hupmobile is a really safe car up to the limit of its speed.

Its Smooth Running.

The eight-cylinder engine, which is tidily and accessibly arranged (the Americans have certainly come ahead a great deal on this important point within the last three years) has a bore and stroke of 76 by 120 approximately, which means an annual tax of £29. The brake horse-power is stated to be over 80. I liked the balance of this engine. I drove it pretty hard, but such vibration as I was able to force out of it was so slight as to be of no importance at all. It picks up and accelerates in a very lively way, and, with that excellent steady steering and a set of particularly efficient springs, it is an unusually pleasant car to drive either in traffic or in the open. It is not astonishingly fast, but its easy cruising speed is something like fifty miles an hour, and rather



A DISTINCTIVE FAST TOURING CAR: THE LATEST 17-H.P. LANCIA LAMBDA LONG WHEEL-BASE CHASSIS, FITTED WITH A SPECIAL WEYMANN FOUR-DOOR BODY.

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Sometimes on a cold morning you press the self-starter of your car and nothing happens. Dead silence! You try again and there's a grunt and a groan. Do you know what it is, meaning to the battery which you cannot see? Do you know you are asking from it more than it can give—that in trying to oblige you it is destroying itself. Fit an Exide Battery. Stipulate for an Exide Battery. Every morning, from its great reserves of calm, composed power it will give you a quick, easy start from cold. Without fuss! Without fail! And without suicide.

Exide

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better than sixty can usually be reached when required. It does its work unobtrusively and with great suavity.

The bodywork is particularly good; and although the instrument board is a trifle ornate for European taste, the dials are just about the neatest I have ever seen. It would perhaps be interesting to critical readers to know that the car I tried had only that day been uncrated, and had not as yet run more than half-a-dozen miles on English roads. JOHN PRIOLEAU.

THE WORLD OF THE THEATRE.

(Continued from Page 616.)

man of wide vista, we have all heard him utter sane and liberal words on the morality of the theatre, but London's Public Morality Council—heaven forbid! It is bad enough that our Reader of Plays, a very enlightened man, is subservient to a Council—evidently unknown to Miss Isabel Jeans—which, in cases of doubt has a right to veto and, despite ceaseless efforts, maintains the cloistering of Wilde's "Salome," a play that is included in the repertoires of all civilised lands, England excepted. But, at any rate, this Council is not wholly intractable: in conjunction with the Lord Chamberlain himself it now and again reverses its verdict. Nor is it the Censor's business to differentiate between that which is suitable for grown-up people and children. That is the public's affair, and the manager's; and if the latter wishes to guide public taste he has but to imitate the directors of certain Continental theatres, who print their bills "for young and old" on white paper and the announcements of plays "for adults only" on red, or follow the cinemas in their "children not admitted." Anything—anything—is better than the supremacy of the Public Morality Council.

But does Miss Isabel Jeans really believe that the fault of our temporary depression has anything whatever to do with the Censor? The root of the question lies elsewhere, and the factors that are to blame for the decline of the theatre's popularity are economic circumstances—the heavy cost of running a playhouse; the fierce competition of the cinema (2s. 3d. or 3s. 6d. for a fine stall against 12s. or 14s. at a theatre); and last, but not least, the mental inertia, lack of enterprise, of syndicated managements. In former days—the days of the actor-manager—at most theatres there was a man at the head of affairs; now, generally, a body. That man, with all his faults, knew his business, was circumspect, on the lookout for good plays; he gauged what

(Continued overleaf.)

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Motor Show, OLYMPIA, 1928.

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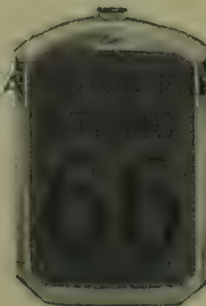
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ELECTRICITY IN DAILY LIFE.

BY PROTONIUS.

XXIII.—DECORATIVE COLOUR LIGHTING.

THE colour of light is a fascinating subject, but not one which is often considered by the majority of people. What, for example, is the colour of daylight? Some would give a short answer to this question; but, as a matter of fact, daylight varies greatly in colour quality. The light under a clear blue sky is different from that reflected from white clouds; thunderstorms introduce curious changes in colour values; and near the times of sunset and sunrise there are varieties of rainbow tints. In the case of artificial light colour plays a more important part than is generally supposed. One has only to consider the difference between candles or oil-lamps and incandescent gas and various types of electric lamp to realise that there is a great deal to be said on this subject. Even among electric lamps themselves there are interesting contrasts.

The first electric lamp was the arc lamp, such as is still used in searchlights. Originally, it gave a rather cold, bluish light; later, the colour was improved; and finally, by the inclusion of chemicals in the carbons forming the arc, a warm, yellow tinge was given to the light. The first incandescent electric lamps seemed white compared with the old flat-flame gas-burners; but when the carbon filament gave place to the metal filament the carbon filament appeared to be slightly yellow in comparison with its rival. The next change—to the "gas-filled" lamp—raised the temperature of the filament nearer to a "white" heat, and thus gave electric light a closer approximation to average daylight. By using a special blue-tinted bulb the gas-filled lamp becomes a "daylight lamp." That is to say, it gives a light which is so near in colour quality to ordinary daylight that fabrics and paints and coloured articles generally may be matched with accuracy.

It might be thought that daylight lamps would be popular for domestic lighting, but in reality they have only a limited application apart from the utilitarian one of matching by artificial light. Practically the only decorative use which can be made of them is in a shaded pendant over the dinner table. The clear white light shows up silver and napery with wonderful effect, all the more if the remainder of the room is slightly illuminated with lamps in tinted silk shades.

For decorative lighting in general the trend is away from the daylight standard to the soft warm yellows which we associate with candles and oil-lamps. Many people continue to use candles and oil in spite of the labour and danger involved, for the sole reason that their light has a mellow quality which suggests cosiness and comfort—and incidentally has the advantage of enhancing the appearance of many fabrics and being very kind to ladies' complexions. Even when the brilliance of ordinary electric light is softened by the use of the new frosted bulbs, or of diffusing shades and reflectors, its colour is frequently regarded as "unsympathetic."

Where there is a demand, invention in most cases meets it sooner or later. The problem before the electric lamp maker was to evolve a lamp which, while efficient as a light-giver, would yield the soft flame-tint which popular taste demanded. The result could not be properly secured by the adoption of tinted shades. Apart from the serious loss of light occasioned by their use, the ultimate colour effect was quite different from that given by candles or oil lamps. Eventually the solution was reached on a kind of side-track from the main road of lamp development. In the effort to obtain a diffusing bulb, lamp-makers produced a special enamel which, when sprayed on to the outside of the bulb and baked, formed a thin diffusing coating. They found, incidentally, that it was possible to dye this enamel any desired shade of yellow from light primrose to orange. Red, blue, and green colours could also be obtained.

This discovery opened up a new prospect in decorative lighting. It made possible a new brilliance and a new variety of tints in the spectacular illumination of promenades, bandstands, fête-grounds, theatres, and places of amusement generally. And it also suggested a field for experiment in domestic lighting. By being able to flood a room with colour, either simple or blended; and by being able to introduce splashes of any particular colour at any part of a room, the decorator found himself in possession of a novel and very flexible instrument. He was able for the first time to illuminate a room directly with colour, instead of relying for his colour effects mainly upon reflection from tinted surfaces. The potentialities of this kind of decorative colour lighting have not yet been fully exploited. They represent a complex field where the expert will find great scope for experiment, if not for those jazz effects which are so much sought after in some quarters. There is,

however, one application which is of general interest and of great simplicity.

One of the tints in the range of yellows is a flame-tint which is almost exactly identical with the mellow tone of candle-light. A room using these lamps solely looks precisely like the old candle-lit room which still represents in our minds the perfection of artistic lighting. Even a few of these lamps among others add a welcome mellow touch to the illumination. A certain loss of illuminating efficiency is involved in these flame-tinted lamps; but electric lighting is now so economical that this is a trifling matter where æsthetic effect is being sought. The all-round improvement in appearance gained by their use is so great that the time is not far distant when drawing-rooms, bed-rooms, and similar apartments will adopt them as standard practice.

A recent development in decorative electric lighting brings us over the frontier of electric heating. A sun-ray lamp has been produced which combines light and radiant heat in a manner which recalls September sunshine at its best. Nothing could be more beautiful, and at the same time more full of the sense of warmth and comfort, than a room fitted with these lamps. The charm of the mellow radiance reminds us that the progress of electric lighting has wholly removed the early reproach of "hard glitter" and "severe brilliance" levelled against it in its infancy.

THE WORLD OF THE THEATRE. (Continued from Page 630.)

the public wanted and suited his own book. The syndicate management often does not know the business; if there is profit—well, there is dividend; if there is none, or a big loss, there is liquidation. What does it matter? It is other people's money.

There are signs that we are returning to the old order of things. The actor-manager is renaissance. Matheson Lang has come back (and will read all plays sent to him); at the Prince of Wales's Leslie Faber and Ronald Squire have made a brilliant promising début. The actor-manager's system has its faults, like all human institutions; but at any rate it points to a lifting of the cloud. And, Censor or no Censor, on the principle of *tout s'arrange*, the theatre, as germane to human nature as life itself, will, for the umpteenth time, rouse itself from the slough of despond which, as histrionic history teaches us, is as regular a feature as the change of seasons.

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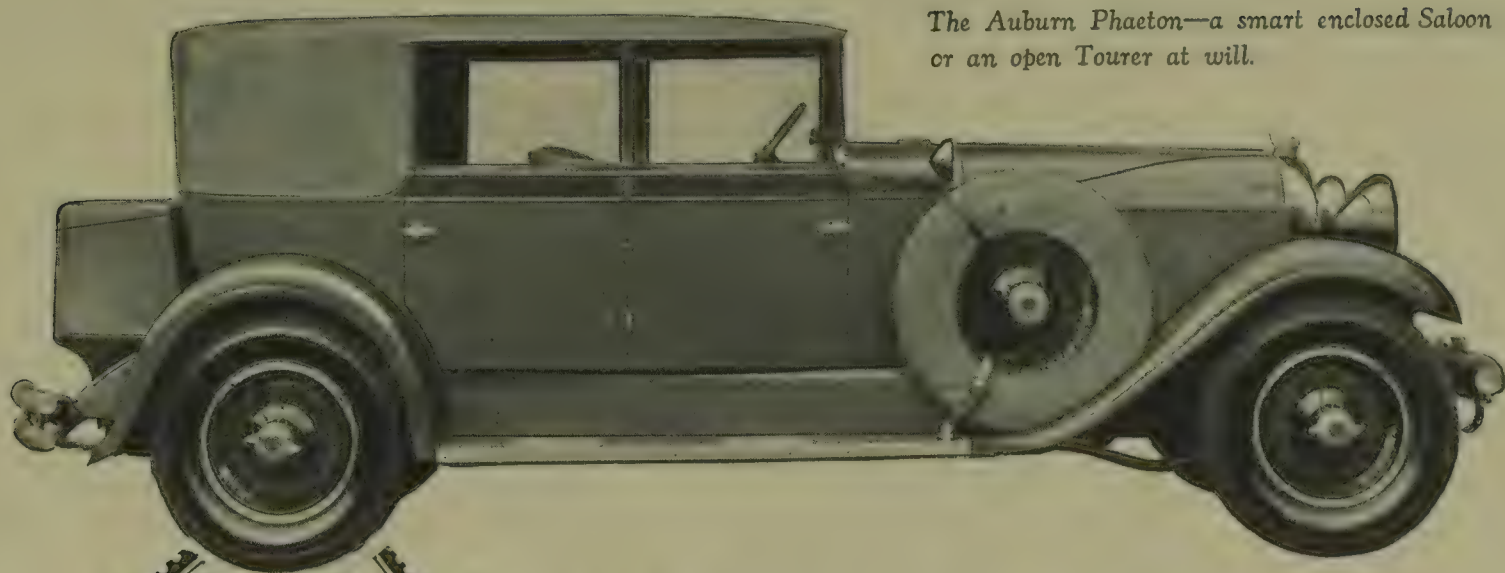


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The Auburn Phaeton—a smart enclosed Saloon or an open Tourer at will.



This is The Car of all the Merits!

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TO CORRESPONDENTS.—Letter intended for this department should be addressed to the Chess Editor, 15, Essex Street, Strand, W.C.2.

SOLUTION OF GAME PROBLEM No. X.

[r1bqkrt; 1p1pspp1; 2Q3P; 1B6; 4S3; B7; P4PPP; 4RtKt. White to mate in five.

This might almost rank with problems of the artificial type, except for some slight criticism on the score of economy. It has produced an extraordinary crop of wrong solutions, and the Chess Editor of the *I.L.N.*, who was playing the White pieces, finds great consolation in the fact that so many readers failed to discover over the board what he missed *sans voir*! No move of the White Q will force mate in five; the key-move is 1. Bb5! If 1. — QR4; 2. KtB6ch, P×Kt; 3. R×Ktch, KQr; 4. R×Pch, KKt; 5. RQ4 or K7 mate. If 1. — P×B; 2. Q×Ktch, Q×Q; 3. KtQ6ch, KQsq; 4. Bb6 mate. The variations are easily found, and all lead to a quicker finish. It is certainly remarkable that none of the strong Q and Kt threats will work, unless preceded by the quiet B move.

ANSWERS TO CORRESPONDENTS.

A EDMESTON (Llandudno).—You are quite right about Game Problem IX. In variation a — 13. PKt4 will not do, because of 14. PKt3; and, as you claim, 13. — Q×KtPch, is the only valid continuation. Variation b is in the main play, and the Black K is off.

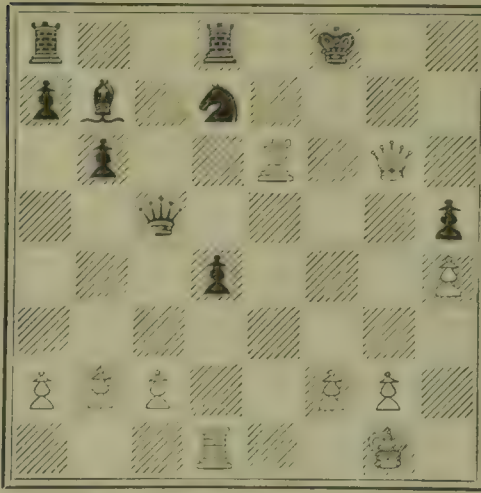
S HOMER (Toulon), K D, W B (Geneva), and OTHERS.—Over thirty wrong solutions of Game Problem X. have been received, most of which suggest Bb6 before or after Qb5. If 1. Qb5, QR4, 2. Bb6, Q×Kt, and there is no mate in five; while if 1. Bb6, P×Qb, and again White takes too many moves in mating.

CORRECT SOLUTIONS OF GAME PROBLEM IX. from John Hannan (Newburgh, N.Y.), 100%; and J W Smedley (Brooklyn), 60 %; of No. X from E G B Barlow (Bournemouth), and J Montgomerie (Fettes College); and of No. XI. from R S (Melrose); F N Braund (Ware), W H Winter (Alton), E G B Barlow (Bournemouth), L Homer (Toulon), F N (Vigo), and M Heath (London).

CORRECT SOLUTION OF PROBLEM No. 4032 from Geo. Parbury (Singapore); of No. 4034 from A Edmeston (Llandudno), Fr. Fix (Wiesbaden), P Cooper (Clapham), and J W Smedley (Brooklyn); and of No. 4035 from F N (Vigo), E Pinkney (Driffield), Fr. Fix (Wiesbaden), Antonio Ferreira (Porto), E G B Barlow (Bournemouth), H Burgess (St. Leonard's), H Richards (Brighton), and M Heath (London).

GAME PROBLEM No. XII.

BLACK (10 pieces).



WHITE (10 pieces).

In Forsyth Notation: r2r1k2; pbrs4; rp2RtQt; 2q4p; 3p3P; 8; PPP2PPt; 3R2Kt.

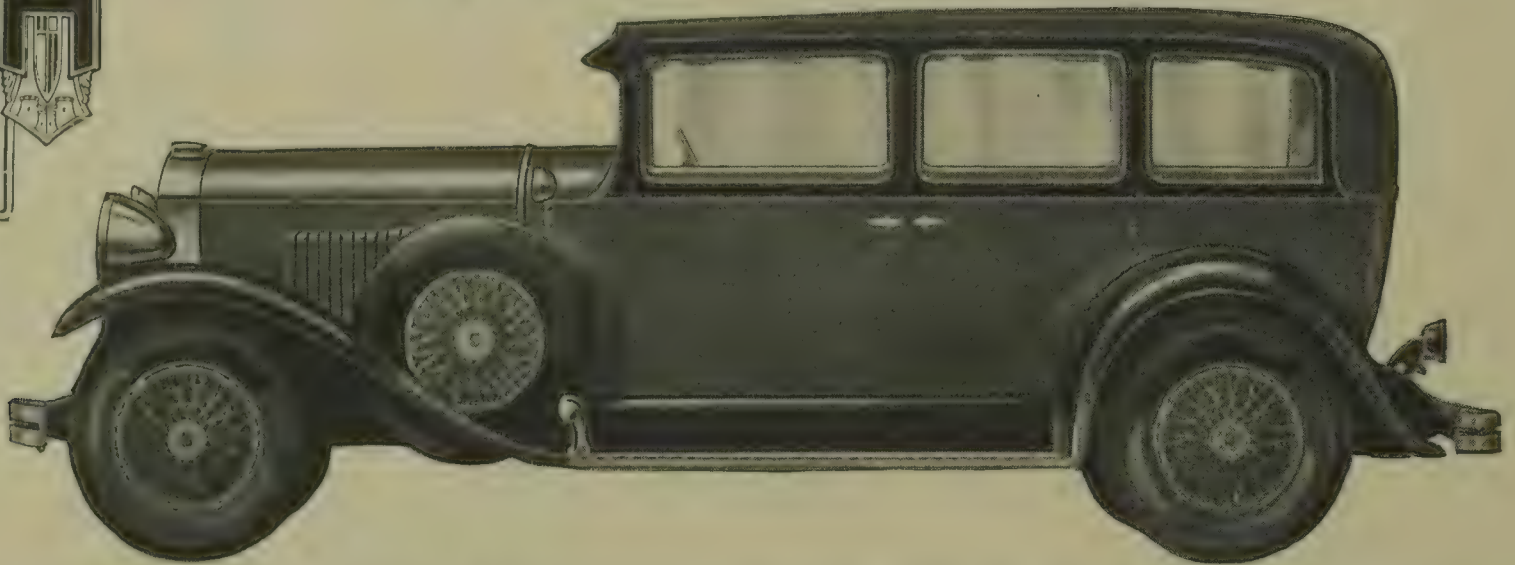
This position is from a "Caro-Kann," in which White brilliantly sacrificed both Knights. It was now his turn to make his 27th move, and he selected a quiet, non-checking continuation, which induced Black's immediate resignation. You are asked to find this move, against which QQ4, BQ4, and RKsq are futile.

"NAPOLEON'S JOSEPHINE," AT THE FORTUNE.

WHY is it that we can never get a Josephine true to history on the stage? The facts about the "little Creole" are not in any dispute. A rather cold woman, who married Napoleon because of his impetuosity, betrayed him in the hour of his triumph,

was pardoned, justified the pardon, and kept his love even after statecraft had parted them and a rival taken her place—here is the real Josephine. But our playwrights seem unable to resist the temptation of embroidering her story with sentimentalism and fantasy. Even Mr. Conal O'Riordan succumbs. It is piquant, perhaps, to meet a Napoleon who is no hero in his home and a Josephine who claims to have made the fortunes of her "little mouse"; but the Irishman's Napoleon, Barras, and Josephine are all placed in more or less fictitious situations. We see them first in the young artillery officer's garret, where politician makes down-at-heel soldier an offer of the Italian campaign on condition that he marries the Directory chief's former mistress; Barras looks on while a fatuous Major ties the knot. A jump of years, and there is a scene in which Josephine, now expecting her ardent husband home from his victories, surrenders again to Barras to assist her Napoleon, and has a wild scramble of farce to conceal her intrigue as the conqueror suddenly arrives. Another jump of years, and we see Barras' remembered figure spoiling the chance of a reconciliation at Malmaison, and at last, in a long-drawn-out passage of pathos, Josephine dies. The players, of course, must follow the author's cues. Mr. Leslie Banks can hardly build up a recognisable Napoleon from the bricks Mr. O'Riordan puts in his hands. Mr. Leon Quartermaine is better off, and with his gifts of style can make at any rate a flamboyant spectacle of Barras. Miss Edith Evans, with her mastery of artifice, her sweeping, challenging charm, her avoidance of emotional crudities, can cover the playwright's hesitations in his imaginary portrait of Josephine, but even she cannot prevent the final scene from dragging. As for Miss Athene Seyler's caricature of Madame de Staël, the actress is not to blame for obeying, presumably, Mr. O'Riordan's intentions.

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THE MOON AND THE TIDES.

(Continued from Page 600.)

in one age would be undone in another. The effects were not cumulative; and accordingly, so long as the bodies were all rigid, the solar system might be perpetual: a sort of Magna Carta of permanence was established on that basis.

But in so far as the bodies are not rigid, in so far as they can be deformed, with friction and dissipation of energy, this law does not hold. Any cumulative effect, which is never reversed, but always acts in one direction, has far more important effects in the long run than alternating or periodic forces. If the National Debt were diminished by a farthing a year, and never increased, it would after the lapse of a certain time be abolished. That sort of thing is happening with the earth's rotation; and so in the course of ages the increase in the length of the day, however slight, if it always continues in the same direction, must wipe it out and make the day as long as the month. Then there would be no more lunar tides. This has actually happened in the case of the moon. The tides produced in the moon's substance by the pull of the earth, which is eighty times as strong as the moon's pull, have wiped out its rotation with reference to the earth, so that it always turns the same face towards us; the only residue of its original rotation being a slight residual oscillation or "libration"—discovered, near the end of his life, by Galileo.

But tidal influence is not limited to the body on which the tides occur. Every action has a corresponding reaction. The moon pulls and holds the earth's tides, but the earth's tides pull equally on the moon. And it is just that apparently small force—not small if we reckon it in thousands of tons—which is causing the moon gradually to recede.

The pull on the moon is an accelerating one, that is to say, a pull in the direction in which it is going; and that such a pull should make it recede and go slower is

at first sight rather a puzzle. It is an immediate consequence of the law of gravitation, however, and it may be illustrated and made a little clearer by considering the opposite case, or what a retarding force would do. Suppose the moon were moving in a retarding medium, dragged back as it were, like a motor-car with the brakes on, what would be the effect of that? Strange to say, it would make the moon go quicker and cause it slowly to approach the earth in a sort of spiral. For let us remember that it is only the moon's motion which keeps it from falling in. Any cannon-ball fired with sufficient speed, even horizontally, would be able to fly for a considerable time without dropping to the ground; and if it could be fired at five miles a second, without any friction from the atmosphere, it would fly right round the world and complete a circular orbit. Anything below that speed would be insufficient, and would allow it to drop down.

The moon at its distance has not to fly so fast as that. The distance it has to travel in one revolution is $1\frac{1}{2}$ million miles, and it suffices if it performs that journey in a month. Any cause which retarded its motion would bring it nearer, and any stoppage would make it drop at once. So, conversely, any cause which tries to accelerate its motion would make it recede, and as it got further away it would have to go slower and yet would still remain suspended.

Now that is just what the tides are doing by their reactionary pull: they are shortening the day and lengthening the month. And that is how George Darwin came to his most interesting conclusion, with much more detail and exact analysis than can even be indicated here, that there was a time in the past when the moon was quite near the earth, and when the day and the month were of the same length, each of them much shorter than they are now—in fact, only a few hours long. The conclusion is, therefore, that the earth and the moon were then one body, that they have gradually separated, the earth going slower, and the moon going

further away, until we come to the condition of things we find to-day.

If, then, we take a flight of imagination and look forward to the time when the day and the month are again equal, and the moon still further away, and when, therefore, the lunar tides have ceased, one might think at first that that would be the end of these cumulative effects. But if we thought that we should be ignoring the solar tides; for everyone knows that, though the solar tide is less important on the earth than the lunar tide, it is not negligible. The combination of the two, when they coincide in phase, produces what we called our "spring" tides; and the opposition of the two makes our "neap" tides. The solar tides would not have stopped, they would continue to lengthen the day without affecting the month; and accordingly in those distant ages the day will slowly become longer than the month. The earth's tides would then begin to pull back on the moon, and thus cause it to approach, slowly, so very slowly that perhaps the solar system will not last long enough; but if it did last long enough the cumulative effects would go on: and the ultimate result would be that our moon would approach the earth, in the same way that Mars's moon is now approaching its planet.

The periods of time involved in these changes are of portentous magnitude; and the problem is only of interest as showing what mighty results can accrue from almost infinitesimal causes, provided they continue to act in one direction without cessation. Causes of this nature are active among all the bodies in space; and the host of heaven, which appeared stationary and were called "fixed stars" by our ancestors, must be the seat of continual and dramatic changes, occurring in periods of times to which the whole of human history is like a breath of mist on a mirror. Time is infinitely long; we can only infer the processes that are going on all round us; and our own existence, at least our terrestrial existence, is like one tick of the eternal clock.



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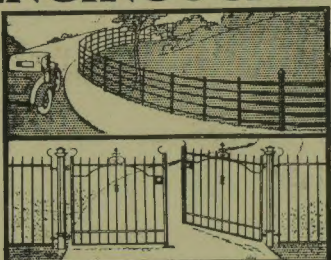
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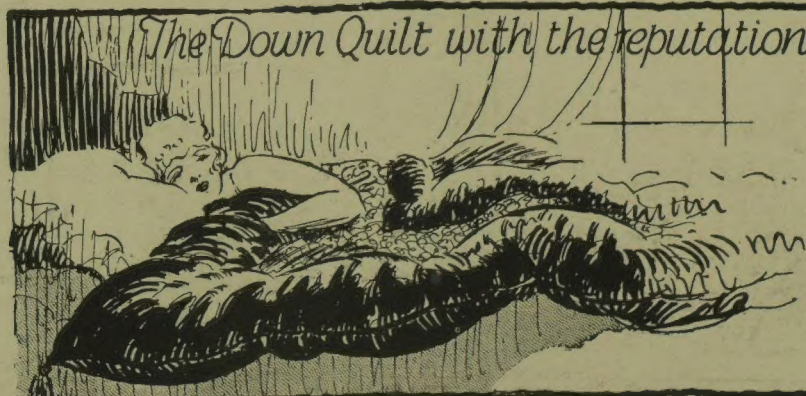
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